AXIS 210/210A/211/211A Installationsanleitung

In dieser Anleitung wird die Installation der AXIS 210/210A/211/211A Netzwerkkamera in einem Netzwerk beschrieben. Alle weiteren Hinweise zur Verwendung des Produkts finden Sie im Benutzerhandbuch, das auf der mitgelieferten CD oder auf unserer Webseite unter www.axis.com/techsup zur Verfügung steht.

Installationsschritte

1. Prüfen Sie, ob alle in der nachfolgenden Liste aufgeführten Komponenten vorhanden sind.
2. Hardwareübersicht: Siehe seite 36.
3. Hardware installieren. Siehe seite 38.
4. IP-Adresse festlegen. Siehe seite 39.
5. Kennwort festlegen. Siehe seite 42.
6. Stellen Sie die Bildschärfe ein. Siehe seite 43.
7. Sprache der Weboberfläche der Kamera ändern (optional). Siehe seite 44.

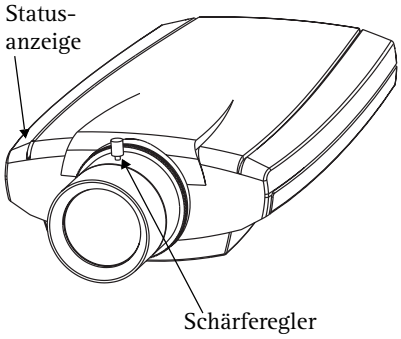
Wichtiger Hinweis!
Verwenden Sie dieses Produkt nur gemäß der geltenden rechtlichen Bestimmungen.

1 Lieferumfang

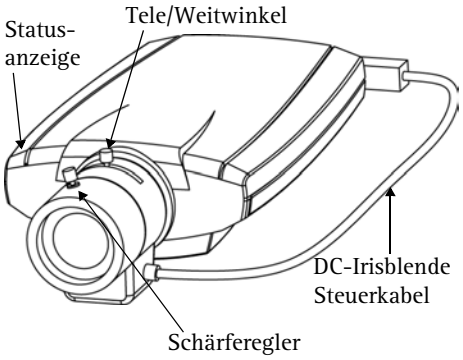
Komponente	Modelle/Varianten/Anmerkungen
Netzwerkkamera	• AXIS 210 • AXIS 210A: PoE, bidirektionales Audio und integriertes Mikrofon • AXIS 211: PoE, Varifokal-Objektiv mit DC-Irisblende • AXIS 211A: PoE, bidirektionales Audio und integriertes Mikrofon, Varifokal-Objektiv mit DC-Irisblende
PS-K-Netzteil für geschlossene Räume (landesspezifisch)	Europa Großbritannien Australien USA/Japan Argentinien Korea
Kamerastativ	Wird mit Schrauben geliefert
Anschlussblock	4-poliger Anschlussblock zum Verbinden externer Geräte mit dem E/A-Anschluss
CD	CD für Axis-Netzwerkvideoprodukte einschließlich Installationstools und anderer Software sowie Produktdokumentation
Gedruckte Dokumente	AXIS 210/210A/211/211A Installationshandbuch (dieses Dokument) Axis-Garantieerklärung

2 Hardwareübersicht

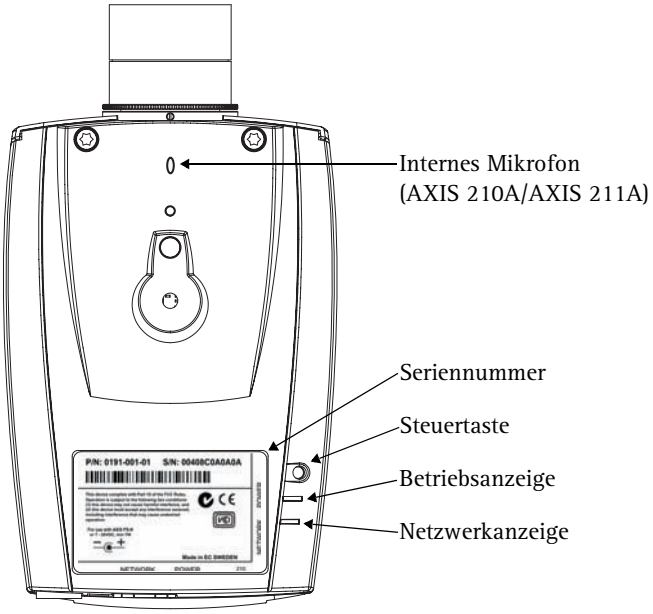
AXIS 210/AXIS 210A



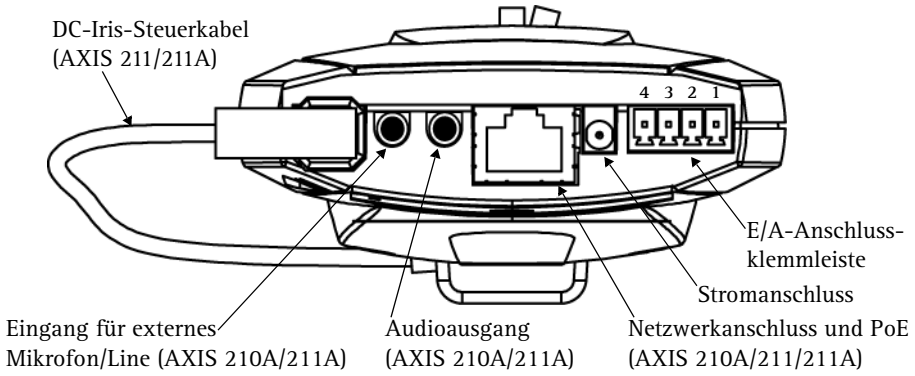
AXIS 211/AXIS 211A



Unterseite



Rückseite



Note:

Abhängig von der Produktversion Ihrer AXIS 210/210A/211/211A sehen Sie einen der zwei verschiedenen E/A Anschlussleistentypen. Sie finden ausführlichere Informationen hierzu auf seite 47.

Abmessungen

AXIS 210/210A:
H × B × T = 38 × 88 × 157 mm
Gewicht (AXIS 210) = 305 g ohne Netzteil
Gewicht (AXIS 210A) = 325 g ohne Netzteil

AXIS 211/211A:
H × B × T = 38 × 95 × 178 mm
Gewicht = 345 g ohne Netzteil

3 Hardware installieren

WICHTIG! - Die AXIS 210/210A ist nur für die Verwendung in Innenräumen vorgesehen und muss grundsätzlich so aufgestellt werden, dass sie keiner direkten Sonneneinstrahlung oder starkem Halogenlicht ausgesetzt ist, da dies zu dauerhaften Schäden am Bildsensor führen kann. Die Garantie von Axis erstreckt sich nicht auf Beschädigungen infolge zu starker Lichteinstrahlung.

WICHTIG! - Die AXIS 211/211A ist für die Verwendung sowohl in Innenräumen als auch für den Außeneinsatz geeignet. Um die Kamera im Freien zu verwenden, muss sie in einem zugelassenen Außengehäuse installiert werden. Auf unserer Homepage unter www.axis.com finden Sie weitere Informationen über Außengehäuse.

Kamera anschließen

1. Verbinden Sie die Kamera über ein geschirmtes Netzwerkkabel mit dem Netzwerk. Die Verwendung von geschirmten Twisted Pair-Kabeln wird empfohlen.
2. Sie können zusätzlich externe Geräte, wie z. B. Alarmanlagen, anschließen. Informationen zur Anschlussbelegung finden Sie auf seite 46.
3. Optional können Sie für eine bidirektionale Audioverbindung zusätzlich einen Aktivlautsprecher anschließen.
4. Schließen Sie die Kamera auf eine der folgenden Arten an die Stromversorgung an:
   - PoE-Anschluss (Power over Ethernet). Wenn PoE vorhanden ist wird der Anschluss automatisch, bei Anschluss des Netzwerkkabels (siehe oben), erkannt.
   - Schließen Sie das mitgelieferte Netzteil an den Netzanschluss der Kamera an.
   - Benutzen Sie den E/A-Anschluss. Informationen zur Anschlussbelegung finden Sie auf seite 46.
5. Überprüfen Sie, ob die LED-Anzeigen die Betriebszustände korrekt angeben. Weitere Informationen finden Sie in der Tabelle auf seite 48. Beachten Sie, dass LEDs deaktiviert sein können und deshalb nicht leuchten.

4 Legen Sie eine IP-Adresse fest.

Der AXIS 210/210A/211/211A muss eine IP-Adresse zugewiesen werden, damit sie im Netzwerk verfügbar ist.

Von der Anzahl der zu installierenden Kameras hängt ab, ob die IP-Adressen unter Windows mit Hilfe von **AXIS IP Utility** oder **AXIS Camera Management** eingerichtet werden sollten. Verwenden Sie die für Ihre Zwecke geeignete Methode.

Beide Anwendungen stehen kostenlos auf der mitgelieferten CD für Axis-Netzwerkvideoprodukte zur Verfügung oder können unter www.axis.com/techsup heruntergeladen werden.

Methode	Empfohlen für	Betriebssystem
AXIS IP Utility Siehe seite 40	Einzelne Kamera Kleine Installationen	Windows
AXIS Camera Management Siehe seite 41	Mehrere Kameras Große Installationen Installation in unterschiedlichen Subnetzen	Windows 2000 Windows XP Pro Windows 2003 Server

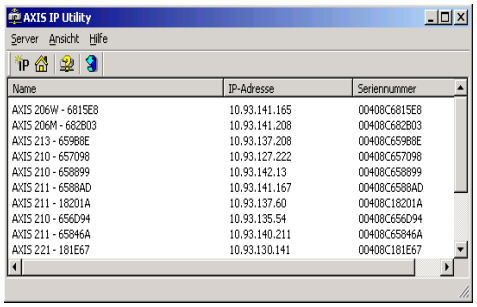
Hinweise:

- Optional kann ein DHCP-Server im Netzwerk genutzt werden.
- Die Standard-IP-Adresse der AXIS 210/210A/211/211A lautet 192.168.0.90.
- Falls ein Festlegen der IP-Adresse nicht möglich ist, müssen ggf. die Einstellungen der Firewall überprüft werden.
- Weitere Informationen zu alternativen Methoden zum Festlegen bzw. Ermitteln der IP-Adresse der AXIS 210/210A/211/211A (z. B. in anderen Betriebssystemen) finden Sie auf seite 43.

AXIS IP Utility – Einzelne Kamera/Kleine Installation

AXIS IP Utility erkennt automatisch im Netzwerk vorhandene Axis-Geräte und zeigt diese an. Die Anwendung kann außerdem zum manuellen Festlegen einer statischen IP-Adresse verwendet werden.

Beachten Sie, dass sich die AXIS 210/210A/211/211A und der Computer, auf dem AXIS IP Utility ausgeführt wird, im gleichen Netzwerksegment (physisches Subnetz) befinden müssen.



Automatische Erkennung

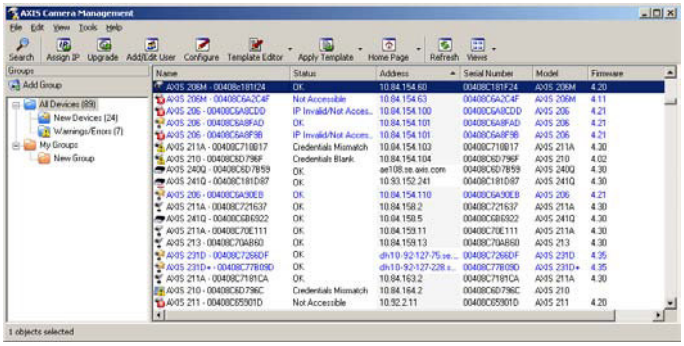
1. Stellen Sie sicher, dass die AXIS 210/210A/211/211A an das Netzwerk und an die Stromversorgung angeschlossen ist.
2. Starten Sie AXIS IP Utility.
3. Doppelklicken Sie auf das Symbol der Kamera, um die entsprechende Homepage zu öffnen.
4. Anweisungen zum Festlegen des Kennworts finden Sie auf seite 42.

IP-Adresse manuell festlegen

1. Wählen Sie eine nicht zugewiesene IP-Adresse aus dem Netzwerksegment, in dem sich auch Ihr Computer befindet.
2. Klicken Sie auf die Schaltfläche **Zuweisung eine neue IP-Adresse unter Verwendung von die Seriennummer** und geben Sie Seriennummer und IP-Adresse der AXIS 210/210A/211/211A ein. Die Seriennummer befindet sich auf dem Produktaufkleber.
3. Klicken Sie auf die Schaltfläche **Zuweisen** und folgen Sie den Anweisungen.
4. Klicken Sie auf **Home Page** um auf die Webseiten der Kamera zuzugreifen.
5. Anweisungen zum Festlegen des Kennworts finden Sie auf seite 42.

AXIS Camera Management - Mehrere Kameras/Große Installation

Mit AXIS Camera Management können automatisch IP-Adressen gefunden, der Verbindungsstatus angezeigt und die Firmware-Aktualisierungen mehrerer Axis-Videoprodukte verwaltet werden.



Automatische Erkennung

1. Stellen Sie sicher, dass die Kamera an das Netzwerk und an die Stromversorgung angeschlossen ist.
2. Starten Sie AXIS Camera Management. Doppelklicken Sie auf das Symbol der AXIS 210/210A/211/211A, um die Startseite der Kamera zu öffnen.
3. Anweisungen zum Festlegen des Kennworts finden Sie auf seite 42.

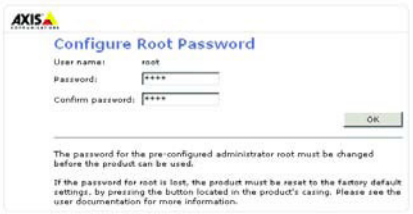
IP-Adresse für mehrere Geräte festlegen

AXIS Camera Management beschleunigt die Zuordnung von IP-Adressen für mehrere Geräte, indem IP-Adressen aus einem angegebenen Bereich vorgeschlagen werden.

1. Wählen Sie die zu konfigurierenden Geräte aus (es können auch unterschiedliche Modelle gewählt werden), und klicken Sie auf das Symbol **Assign IP** (IP-Adresse zuweisen).
2. Wählen Sie **Obtain IP addresses automatically** (IP-Adressen automatisch zuweisen) **(DHCP),** und klicken Sie auf die Schaltfläche **Update** (Aktualisieren). Das Programm startet eine Suche im angegebenen Bereich und schlägt für jedes Gerät eine IP-Adresse vor.
   - Oder -
   Geben Sie den Bereich der IP-Adressen, die Subnetzmaske und den Standardrouter für die Geräte ein, und klicken Sie auf die Schaltfläche **Update** (Aktualisieren).

5 Kennwort festlegen

Beim erstmaligen Zugriff auf die AXIS 210/210A/211/211A wird das Dialogfeld „**Configure Root Password (Root-Kennwort konfigurieren)**“ angezeigt.


Configure Root Password
User name:
root
Password:
Confirm password:
OK
The password for the pre-configured administrator root must be changed before the product can be used.
If the password for root is lost, the product must be reset to the factory default settings, by pressing the button located in the product's casing. Please see the user documentation for more information.

1. Geben Sie ein Kennwort ein, und wiederholen Sie die Eingabe, um die korrekte Schreibweise zu bestätigen. Klicken Sie auf **OK**.
2. Geben Sie in das Dialogfeld als Kennwort „ root“ ein.
   Hinweis: Der standardmäßige Administrator-Benutzername „root“ kann nicht gelöscht werden.
3. Geben Sie das in Schritt 1 festgelegte Kennwort ein, und klicken Sie auf **OK**. Wenn Sie das Kennwort vergessen haben, muss die AXIS 210/210A/211/211A auf die Werkseinstellungen zurückgesetzt werden. (Siehe seite 49)
4. Klicken Sie auf **Ja**, um AMC (AXIS Media Control) zu installieren. Nach Abschluss der Installation können Sie Video-Streams in Microsoft Internet Explorer anzeigen. Hierzu müssen Sie über Administratorrechte für den Computer verfügen.

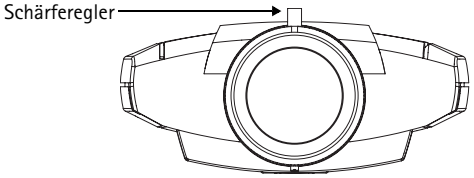
Die Seite „**Live-View (Live-Ansicht)**“ der AXIS 210/210A/211/211A wird angezeigt. Sie enthält Links zu Setup-Tools, mit denen Sie die Kamera Ihren Bedürfnissen entsprechend anpassen können.

Setup: Alle zur benutzerspezifischen Konfiguration der Kamera notwendigen Werkzeuge.

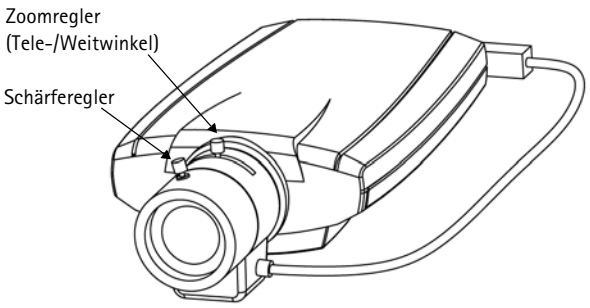
Hilfe: Zum Aufrufen der Online-Hilfe für die Kamera.

6 Bildschärfe einstellen

Zum Einstellen der Bildschärfe der AXIS 210/210A lösen Sie den Schärferegler am Objektiv. Stellen Sie die erforderliche Bildschärfe ein. Drehen Sie den Schärferegler wieder fest.



Gehen Sie folgendermaßen vor, um die Bildschärfe der AXIS 211/211A einzustellen.



1. Öffnen Sie unter Setup-Tools die Seite **Standardkonfiguration**, und gehen Sie dort auf die Seite **Bildschärfe einstellen**.
2. Wählen Sie *DC-Blende: Deaktiviert*, und klicken Sie auf **Speichern**.
3. Lösen Sie den Zoomregler am Objektiv, indem Sie ihn entgegen dem Uhrzeigersinn drehen. Nehmen Sie die erforderlichen Zoomeinstellungen vor. Drehen Sie den Zoomregler wieder fest.
4. Lösen Sie den Schärferegler am Objektiv. Stellen Sie die erforderliche Bildschärfe ein. Drehen Sie den Schärferegler wieder fest.
5. Wählen Sie *DC-Blende: Aktiviert*, und klicken Sie auf **Speichern**.

Hinweis: Die DC-Blende muss beim Scharfstellen der Kamera immer deaktiviert werden. Sie ist dann vollständig geöffnet, und die niedrigste Schärfentiefe kann erreicht werden. Dies sind die besten Voraussetzungen für eine richtige Fokussierung. Wenn Sie die Schärfe auf diese Weise regulieren, wird sie bei allen Lichtverhältnissen beibehalten.

Auf die AXIS 210/210A/211/211A vom Internet aus zugreifen

Sobald die AXIS 210/210A/211/211A installiert ist, können Sie innerhalb Ihres lokalen Netzwerks (LAN) darauf zugreifen. Um auch über das Internet auf die Kamera zugreifen zu können, müssen Sie Ihre Netzwerk-Router so konfigurieren, dass sie den entsprechenden eingehenden Datenverkehr zulassen. Dabei wird meist ein bestimmter Port gewählt. Ausführliche Informationen zu diesem Thema finden Sie in der Dokumentation des Routers.

Weitere Informationen zu diesem und anderen Themen erhalten Sie im Axis Support Web unter www.axis.com/techsup

7 Sprachoberfläche

Nach Installation der Netzwerkkamera können Sie ein Sprachmodul herunterladen und installieren, mit dessen Hilfe Sie die Weboberfläche der Kamera auf eine andere Sprache als Englisch einstellen können:

1. Wählen Sie **Setup** > **Language (Sprache)**.
2. Laden Sie unter www.axis.com/techsup/ die gewünschte Sprache herunter, und speichern Sie sie temporär auf Ihrem Computer.
3. Klicken Sie auf **Durchsuchen**, und suchen Sie die Sprachdatei.
4. Klicken Sie auf **Upload Language (Sprache hochladen)**. Nach dem Hochladen erscheint die Sprache unter **Select Language (Sprache auswählen)**.
5. Wählen Sie die Sprache aus, die Sie für Ihre Axis-Kamera benutzen möchten, und klicken Sie auf **Speichern**.

Andere Methoden zum Festlegen der IP-Adresse

Diese Tabelle bietet einen Überblick über weitere Methoden, die IP-Adresse festzulegen bzw. zu ermitteln. Alle Methoden sind standardmäßig aktiviert und können deaktiviert werden.

	Verwendung im Betriebssystem	Hinweise
UPnP™	Windows	Wenn die Funktion auf dem Computer aktiviert ist, wird die Kamera automatisch erkannt und zur „Netzwerkumgebung" hinzugefügt.
Bonjour	MAC OSX (ab Vers. 10.4)	Kann nur bei Browsern verwendet werden, die Bonjour unterstützen. Navigieren Sie zum Bonjour-Lesezeichen Ihres Browsers (z. B. Safari), und klicken Sie auf den Link, um auf die Webseiten der Kamera zu gelangen.
AXIS Dynamic DNS Service	Alle	Ein kostenloser Service von Axis, mit dem Sie Ihre Kamera schnell und einfach installieren können. Eine Internetverbindung ohne HTTP-Proxyserver ist Voraussetzung. Weitere Informationen hierzu finden Sie auf www.axiscam.net
ARP/Ping	Alle	Siehe unten. Der Befehl muss innerhalb von 2 Minuten erfolgen, nachdem die Kamera an das Stromnetz angeschlossen wurde.
Admin-Seiten des DHCP-Servers anzeigen	Alle	Hinweise zum Anzeigen der Administrationsseiten des DHCP-Servers im Netzwerk finden Sie in der Serverdokumentation.

IP-Adresse per ARP/Ping zuweisen

1. Wählen Sie eine IP-Adresse aus dem Netzwerksegment, in dem sich auch Ihr Computer befindet.
2. Sehen Sie nach der Seriennummer (S/N) auf dem Produktaufkleber der AXIS 210/210A/211/211A.
3. Öffnen Sie auf Ihrem Computer die Eingabeaufforderung, und geben Sie die folgenden Befehle ein:

Syntax unter Windows:	**Beispiel für Windows**
`arp -s <IP-Adresse> <Seriennummer>` `ping -l 408 -t <IP-Adresse>`	`arp -s 192.168.0.125 00-40-8c-18-10-00` `ping -l 408 -t 192.168.0.125`
Syntax unter UNIX/Linux/Mac	**Beispiel für UNIX/Linux/Mac**
`arp -s <IP-Adresse> <Seriennummer> temp` `ping -s 408 <IP-Adresse>`	`arp -s 192.168.0.125 00:40:8c:18:10:00 temp` `ping -s 408 192.168.0.125`

4. Stellen Sie sicher, dass das Netzwerkkabel mit der Kamera verbunden ist, und starten Sie die Kamera bzw. starten Sie diese neu, indem Sie die Stromversorgung unterbrechen und wiederherstellen.
5. Schließen Sie die Befehlszeile, sobald „Reply from 192.168.0.125: ..." oder eine ähnliche Meldung erscheint.
6. Starten Sie einen Browser, geben Sie im Adressfeld „http://<IP-Adresse>" ein, und drücken Sie die Eingabetaste auf der Tastatur.

Hinweise:

- So öffnen Sie unter Windows die Eingabeaufforderung: Wählen Sie im Startmenü die Option „Ausführen ...", und geben Sie „cmd" ein. Klicken Sie auf OK.
- Verwenden Sie zum Eingeben des Befehls „ARP" unter Mac OS X das Dienstprogramm „Terminal", das Sie unter „Anwendung > Dienstprogramme" finden.

Kameraanschlüsse

Netzwerkanschluss - RJ-45-Ethernetanschluss. Die Verwendung von geschirmten Twisted Pair-Kabeln wird empfohlen.

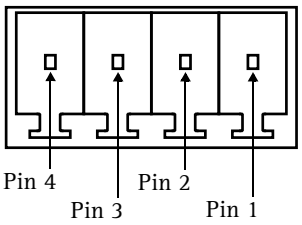
Stromanschluss - Mini-Gleichstromanschluss. 7–20 V Gleichstrom, max. 5 W;

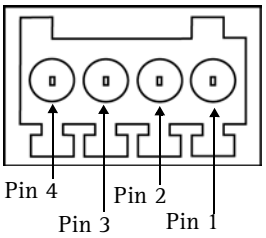
Audio-Eingang - 3,5 mm-Eingang für Mono-Mikrofon oder Line-In-Monosignal (linker Kanal für Stereo-Signal).

Audio-Ausgang - Audio-Ausgang (Line-Pegel), der mit einem PA-System oder einem Aktivlautsprecher mit integriertem Verstärker verbunden werden kann. Auch der Anschluss von Kopfhörern ist möglich. Für den Audio-Ausgang muss ein Stereoanschluss verwendet werden.

E/A-Anschluss - Wird z. B. verwendet für Bewegungserkennung, Ereignistriggerung, Zeitrafferaufnahmen, Alarm-Benachrichtigungen usw. und bildet die Schnittstelle für:

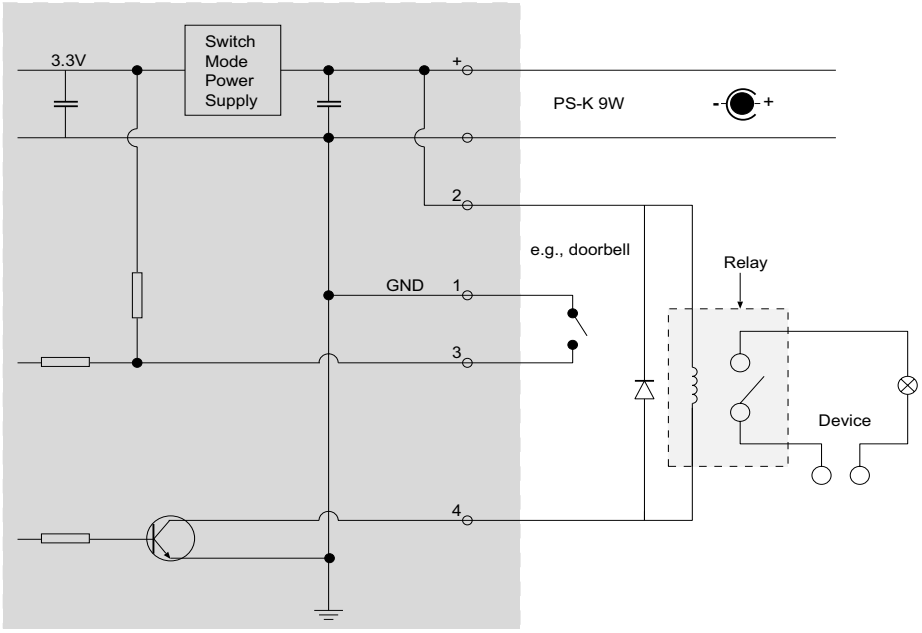
- 1 Transistorausgang: Für den Anschluss externer Geräte, wie Relais und LEDs. Angeschlossene Geräte können auf der Seite **Live Ansicht** über die Schaltflächen für den Ausgang oder durch einen **Ereignistyp** aktiviert werden. Der Ausgang wird unter **Ereigniskonfiguration > Port-Status** als „aktiviert“ angezeigt, wenn das angeschlossene Gerät eingeschaltet ist.
- 1 digitaler Eingang: Alarmeingang für den Anschluss von Geräten, die zwischen geöffnetem und geschlossenem Schaltkreis wechseln können, z. B.: PIR-Kameras, Tür/Fensterkontakte, Glasbruchmelder usw. Bei Empfang eines Signals ändert sich der **Status**, und der Eingang wird aktiviert (angezeigt unter**Ereigniskonfiguration > Port-Status**).
- Zusatzstromversorgung und Masse.





Pinnummer	Funktion	Hinweise	Technische Daten
4	Transistor ausgang	Verwendet einen NPN-Transistor mit offenem Kollektor, wobei der Emitter mit dem Massepin verbunden ist. Zum Schutz vor Spannungsspitzen muss bei der Kombination mit einem externen Relais eine Diode parallel zur Last geschaltet werden.	max. Stromstärke = 50 mA Max. Spannung = 24 V Gleichstrom (zum Transistor)
3	Digitaler Eingang	Zum Aktivieren mit dem Massekontakt verbinden; zum Deaktivieren nicht anschließen.	Die angelegte Spannung darf maximal 10 V Gleichstrom betragen!
2	7 - 20 V Gleichstrom	Zur Stromversorgung von Zusatzgeräten.	max. Stromstärke = 50 mA
1	Masse		

Anschlussschaltbild



LED-Anzeigen

LED	Farbe	Bedeutung
Netzwerk	Grün	Leuchtet dauerhaft bei einer Netzwerkverbindung mit 100 Mbit/s. Blinkt bei Netzwerkaktivität.
	Gelb	Leuchtet dauerhaft bei Netzwerkverbindung mit 10 Mbit/s. Blinkt bei Netzwerkaktivität.
	Leuchtet nicht	Keine Netzwerkverbindung.
Status	Grün	Leuchtet bei Normalbetrieb dauerhaft grün. Hinweis: Die Status-LED kann so konfiguriert werden, dass sie bei normalem Betrieb nicht leuchtet oder nur dann blinkt, wenn auf die Kamera zugegriffen wird. Klicken Sie zur Konfiguration auf Setup > Systemoptionen > LED-Einstellungen. Nähere Informationen dazu finden Sie in der Online-Hilfe.
	Gelb	Leuchtet dauerhaft beim Start und beim Wiederherstellen der Werkseinstellungen bzw. von vorherigen Einstellungen.
	Rot	Blinkt langsam bei Aktualisierungsfehler.
Power	Grün	Normalbetrieb.
	Gelb	Blinkt grün/gelb bei Firmware-Aktualisierung.

Werkseitige Standardeinstellungen wiederherstellen

Gehen Sie folgendermaßen vor, um sämtliche Parameter einschl. der IP-Adresse auf die werkseitigen Standardeinstellungen zurückzusetzen:

1. Trennen Sie die Kamera von der Stromversorgung.
2. Betätigen Sie die Reset-Taste (Rückseite), halten Sie diese gedrückt, und stellen Sie die Stromversorgung wieder her.
3. Halten Sie die Taste gedrückt, bis die Statusanzeige gelb leuchtet (dies kann bis zu 15 Sekunden dauern), und lassen Sie danach die Taste los.
4. Wenn die Statusanzeige grün leuchtet (dies kann bis zu einer Minute dauern), wurde die Kamera auf die werkseitigen Standardeinstellungen zurückgesetzt.
5. Installieren Sie die AXIS 210/210A/211/211A erneut. Wenden Sie dabei eines der in diesem Handbuch beschriebenen Verfahren an.

Weitere Informationen

Das Benutzerhandbuch ist auf der Axis Website unter http://www.axis.com erhältlich und befindet sich auch auf der mitgelieferten CD für Axis-Netzwerkvideoprodukte.

Tipp!
Unter www.axis.com/techsup finden Sie Firmware-Aktualisierungen für Ihre AXIS 210/210A/211/211A. Gehen Sie unter „Setup“ auf die Seite „Grundkonfiguration,“ um die aktuelle Firmware-Version anzuzeigen.

AXIS 210/211
Network Cameras

User's Manual

About this Document

This manual is intended for administrators and users of the AXIS 210/211 Network Camera and applies to firmware release 4.40. It includes instructions for using and managing the AXIS 210/211 on your network. Previous experience of networking will be of use when using this product. Some knowledge of UNIX or Linux-based systems may also be beneficial, for developing shell scripts and applications. Later versions of this document will be posted to the Axis Website, as required. See also the product's online help, available via the Web-based interface.

Safety Notices Used In This Manual

Caution! - Indicates a potential hazard that can damage the product.
Important! - Indicates a hazard that can seriously impair operation.
Do not proceed beyond any of the above notices until you have fully understood the implications.

Intellectual Property Rights

Axis AB has intellectual property rights relating to technology embodied in the product described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the patents listed at http://www.axis.com/patent.htm and one or more additional patents or pending patent applications in the US and other countries.

This product contains licensed third-party software. See the menu item "About" in the product's user interface for more information.

This product contains source code copyright Apple Computer, Inc., under the terms of Apple Public Source License 2.0 (see http://www.opensource.apple.com/apsl/).
The source code is available from:
http://developer.apple.com/darwin/projects/bonjour/

Legal Considerations

Video and audio surveillance can be prohibited by laws that vary from country to country. Check the laws in your local region before using this product for surveillance purposes. This product includes one (1) MPEG-4 decoder license. To purchase further licenses, contact your reseller.

Electromagnetic Compatibility (EMC)

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Re-orient or relocate the receiving antenna. Increase the separation between the equipment and receiver. Connect the equipment to an outlet on a different circuit to the receiver. Consult your dealer or an experienced radio/TV technician for help. Shielded (STP) network cables must be used with this unit to ensure compliance with EMC standards.

USA – This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his/her own expense will be required to take whatever measures may be required to correct the interference.

Europe – CE This digital equipment fulfills the requirements for radiated emission according to limit B of EN55022/1998, and the requirements for immunity according to EN55024/1998 residential, commercial, and light industry.

Japan – This is a class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI:2003 Class B ITE). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Australia – This electronic device meets the requirements of the Radio communications (Electromagnetic Compatibility) Standard 1998 AS/NZS 3548.

Canada – This Class B digital apparatus complies with Canadian ICES-003 B by complience with EN55022: Class B.

Liability

Every care has been taken in the preparation of this manual. Please inform your local Axis office of any inaccuracies or omissions. Axis Communications AB cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. Axis Communications AB makes no warranty of any kind with regard to the material contained within this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Axis Communications AB shall not be liable nor responsible for incidental or consequential damages in connection with the furnishing, performance or use of this material.

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Support

Should you require any technical assistance, please contact your Axis reseller. If your questions cannot be answered immediately, your reseller will forward your queries through the appropriate channels to ensure a rapid response. If you are connected to the Internet, you can:
- download user documentation and firmware updates
- find answers to resolved problems in the FAQ database. Search by product, category, or phrases
- report problems to Axis support by logging in to your private support area
- visit Axis Support at www.axis.com/techsup/

Safety Notice - Battery Replacement

The AXIS 210/211 uses a 3.0V CR2032 Lithium battery as the power supply for its internal real-time clock (RTC). Under normal conditions this battery will last for a minimum of 5 years. Low battery power affects the operation of the RTC, causing it to reset at every power-up. A log message will appear when the battery needs replacing. The battery should not be replaced unless required!

If the battery does need replacing, please observe the following:
- Danger of Explosion if battery is incorrectly replaced
- Replace only with the same or equivalent battery, as recommended by the manufacturer.
- Dispose of used batteries according to the manufacturer's instructions.

AXIS 210/211 User's Manual
Revision 4.0, Part No: 28519, 16-02-07
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Introduction

This manual covers the following Axis Network Camera models:

- AXIS 210
- AXIS 211

All instructions and information in this manual are valid for both models unless otherwise stated.

Product features

The AXIS 210/211 cameras are part of the latest generation of fully featured Axis Network Cameras, and are all based on the AXIS ARTPEC-2 compression chip.

The most basic model is the AXIS 210. The AXIS 211 supports further features listed in the overview below. Both models support the following features:

- Video streams from the camera available on the network as real-time, full frame rate Motion JPEG and/or MPEG-4 video streams.
- Video Motion Detection - this can be used to trigger e.g. image uploads when there is activity in the video image.
- Scheduled image uploads.
- IP address filtering and multilevel password protection.
- Alarm input and output, which can be connected to various external devices, e.g. door sensors and alarm bells.
- Multiple video resolutions.
- Simultaneous access by up to 20 viewers when using Motion JPEG. If MPEG-4 multicast is used, the number of viewers is unlimited, but each viewer still needs a separate MPEG-4 license. One license is included in the product, additional licenses can be purchased separately.
- Privacy masking allows the concealment of parts of the image that should not be viewable. Up to 3 areas can be configured as masked areas.
- Built-in web server that provides full access to all features via a standard web browser.

- Built-in scripting tool that allows the creation of basic applications. For advanced functionality, the cameras can be accessed via the AXIS HTTP API (more info at www.axis.com/developer).

Extra features for the AXIS 211

DC-Iris

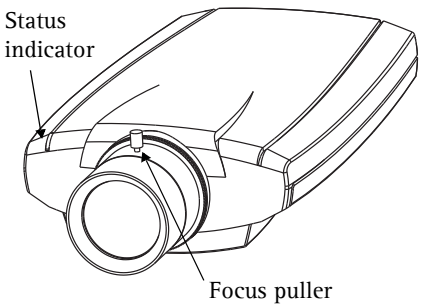
The AXIS 211 features a varifocal DC-Iris, which automatically regulates the amount of light entering the camera. Tele/wide and focus are adjusted manually with the aid of the pullers mounted on the lens.

(PoE) Power over Ethernet

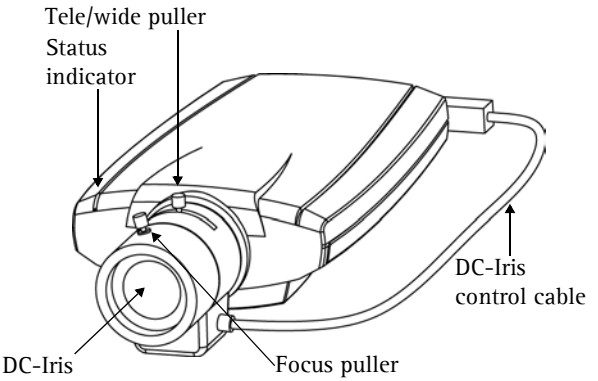
Supporting PoE network transformers conforming to IEEE 802.3af, the camera can be powered directly from the network cabling.

Overview

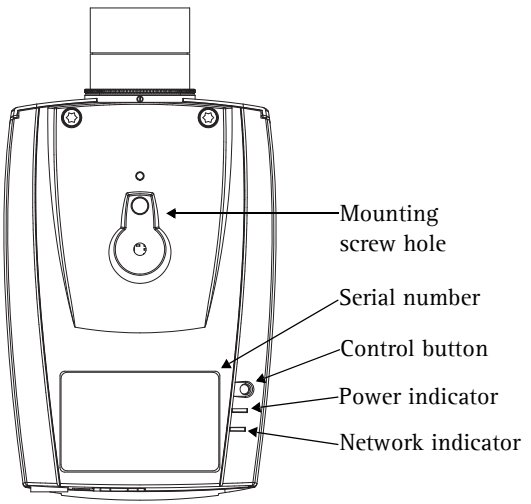
AXIS 210



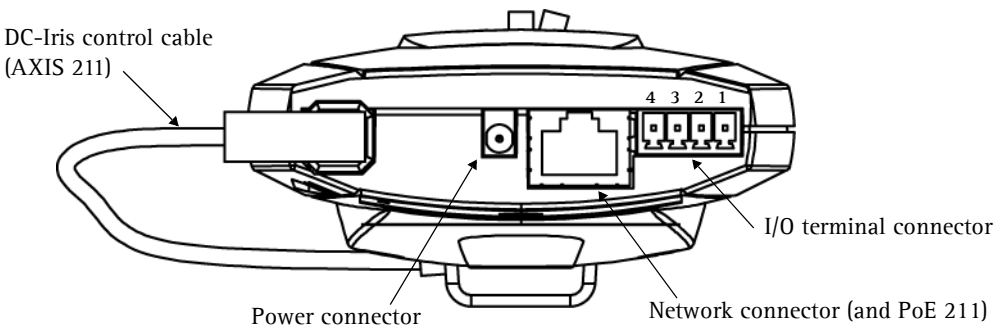
AXIS 211



Underside



Rear panel



Power Connector - For connection of the PS-K power adapter (included).

I/O Terminal Connector - The I/O terminal connector provides the physical interface to one transistor output, one digital input and an auxiliary connection point for DC power. For more information, see *The I/O Terminal Connector*, on page 43.

Note: Depending on the product version of your AXIS 210/211, you will see one of two different types of I/O terminal connectors. See *The I/O Terminal Connector*, on page 43.

Network Connector - The camera connects to the network via a standard network connector. The camera detects the speed of the local network segment (10BaseT/100BaseTX Ethernet). This socket can also be used to power the AXIS 211 via PoE (Power over Ethernet).

Serial Number - This number is used during installation.

Control Button - Press this button to install using the AXIS Internet Dynamic DNS Service (see page 36) or to restore the factory default settings, as described in *Resetting to the Factory Default Settings, on page 42*.

LED Indicators

After completion of the startup and self test routines, the multi-colored Network, Status, and Power LED indicators show as follows:

LED	Color	Indication
Network	Green	Steady for connection to a 100 Mbit/s network. Flashes for network activity.
	Amber	Steady for connection to 10 Mbit/s network. Flashes for network activity.
	Unlit	No network connection.
Status	Green	Steady green for normal operation. Note: The Status LED can be configured to be unlit during normal operation, or to flash only when the camera is accessed. To configure, go to Setup > System Options > LED settings. See the online help files for more information.
	Amber	Steady during startup, during reset to factory default or when restoring settings.
	Red	Slow flash for failed upgrade.
Power	Green	Normal operation.
	Amber	Flashes green/amber during firmware upgrade.

Accessing the Camera

Follow the instructions in the AXIS 210/211 Installation Guide to install your camera.

The AXIS 211 can be accessed with most standard operating systems and browsers. The recommended browser is Internet Explorer for Windows, and Mozilla with other operating systems. See also the *Technical Specifications,* on page 45.

Note: To view streaming video in Microsoft Internet Explorer for Windows, you may set your browser to allow the AXIS Media Control (AMC) to be installed on your computer. The first time an MPEG-4 video stream is accessed AMC also installs an MPEG-4 decoder for viewing the video streams. As a license is required for each instance of the decoder, the product administrator may have disabled the installation. If your workstation restricts the use of additional software components, the AXIS 211 can be configured to use a Java applet for updating JPEG images. See the online help for more information.

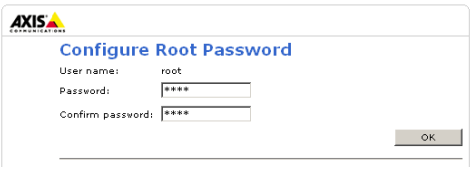
Access From a Browser

1. Start a browser (e.g. Internet Explorer, Mozilla)
2. Enter the IP address or host name of the AXIS 211 in the **Location/Address** field of your browser.

3. If this is the first time the camera is accessed, see *Setting the Password,* on page 10. Otherwise enter your user name and password, as set by the administrator.
4. The camera's **Live View** page is now displayed in your browser.

Note: The layout of the live view page in the AXIS 211 may have been customized to meet specific requirements. Consequently, some of the examples and functions featured here may differ from those displayed on your own Live View page.

Setting the Password



1. When accessing a camera for the first time, the '**Configure Root Password**' dialog will be displayed on the screen.
2. Enter a password and then re-enter it, to confirm the spelling. Click **OK**.
3. The '**Enter Network Password**' dialog will appear. Enter the User name: **root**
   Note: The default administrator user name **root** is permanent and cannot be deleted.
4. Enter the password as set in step 2 above, and click **OK**. If the password is lost, the AXIS 211 must be reset to the factory default settings. See page 42.
5. If required, click **Yes** to install the AXIS Media Control (AMC). You will need administrator rights on the computer to do this.

Accessing the camera from the Internet

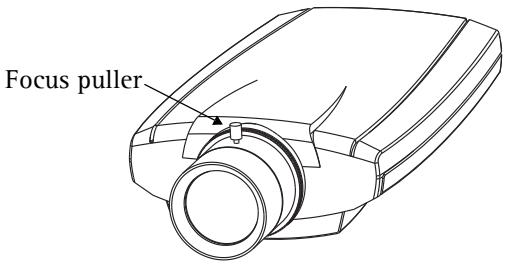
Once installed, a camera is accessible on your local network (LAN). To access the camera from the Internet you must configure your broadband router to allow incoming data traffic. For security reasons this is usually done on a specific port. Please refer to the documentation for your broadband router for further instructions.

For more information, please visit the AXIS Internet Dynamic DNS Service at www.axiscam.net or, for Technical notes on this and other topics, visit the Axis Support Web at www.axis.com/techsup

Focusing

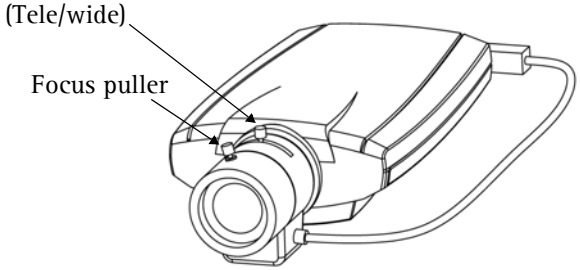
To focus the AXIS 210, unscrew the focus puller on the lens. Adjust the focus as required. Re-tighten the focus puller.

AXIS 210



To focus the AXIS 211, follow the instructions below.

AXIS 211

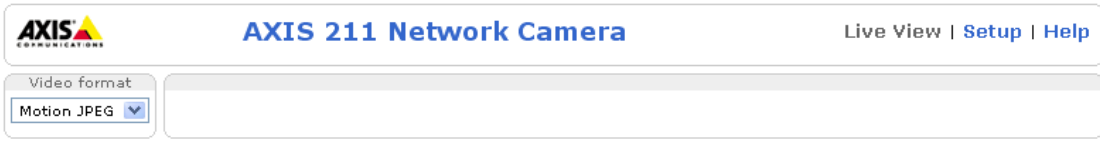


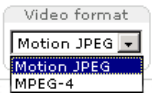
1. From the **Basic Configuration** page in the setup tools, open the **Focus adjustment** page.
2. Set the DC-Iris to *Disabled* and click **Save**.
3. Unscrew the zoom puller on the lens by turning it anti-clockwise. Adjust the zoom setting as required. Re-tighten the zoom puller.
4. Unscrew the focus puller on the lens. Adjust the focus as required. Re-tighten the focus puller.
5. From the Focus adjustment page, set the DC-Iris to *Enabled* and click **Save**.

Note: The DC-Iris should always be disabled while focusing the camera. This opens the iris to its maximum, which gives the smallest depth of field and thus the best conditions for correct focusing. When the focus is set with this method it will then be maintained in any light conditions.

The Live View Page

Depending on whether or not the Live View page has been customized, the buttons described below may or may not be visible.





The Video Format drop-down list allows the video format on the Live View page to be temporarily changed.

The **Output buttons** control the output directly from the **Live View** page. These buttons are configured under **Setup > Live View Config > Layout**.

Pulse - click this button to activate the output for a defined period of time, e.g. to switch on a light for 20 seconds.

Active/Inactive - click these buttons to manually start and stop a connected device, e.g. switch a light on/off.

These buttons start and stop the **Sequence Mode**. This mode is created in **Setup > Live View Config > Sequence mode**, and automatically displays the view from 2 or more video sources at set intervals.

From the **Source** list, select the desired external video source. Note that Sequence Mode must be stopped before selecting a source from this list.

The **Action buttons** can trigger an event directly from the **Live View** page. These are configured under **Setup > Live View Config > Layout**.

The **Snapshot** button saves a snapshot of the video image currently being displayed. Right-click on the video image to save it in JPEG format on your computer. This button is primarily intended for use when the AMC viewer toolbar is not available.

The **Live View toolbar** displays the following buttons:

The **Play/Stop** button starts and stops the live video stream.

The **Snapshot** button saves a snapshot of the video image currently being displayed. The Snapshot function and the target directory for saving snapshots can be configured from the AMC Control Applet in the Windows Control Panel (Internet Explorer for Windows only).

Click the **View Full Screen** button to make the video image fill the entire screen area. No other windows will be visible. Press **Esc** (Escape) on the computer keyboard to exit full screen.

The record button is used to record the current video stream. The location where the image file is saved can be specified using the AMC control panel. To enable recording, Select **Live View Config** > **Viewer Settings** > **Enable recording button**.

Video Streams

The AXIS 210/211 provides several different image and video formats. The type to use depends on your requirements and on the properties of your network.

The Live View page in the AXIS 210/211 provides access to Motion JPEG and MPEG-4 video streams, as well as to single JPEG images. Other applications and clients can also access these video streams/images directly, without going via the Live View page.

Video Stream Types

Motion JPEG

This format uses standard JPEG still images in the video stream. These images are then displayed and updated at a rate sufficient to create a stream that shows constantly updated motion.

The Motion JPEG stream uses considerable amounts of bandwidth, but also provides excellent image quality and access to each and every individual image contained in the stream.

Note also that multiple clients accessing Motion JPEG streams can use different image settings.

MPEG-4

This is a video compression standard that makes good use of bandwidth, and which can provide high-quality video streams at less than 1 Mbit/s.

The MPEG-4 standard provides scope for a large range of different coding tools for use by various applications in different situations, and the AXIS 210/211 provides certain subsets of these tools. These are represented as **Video object types**, which are selected for use with different viewing clients. The supported video object types are:

- **Simple** - sets the coding type to H.263, as used by e.g. QuickTime™.
- **Advanced Simple** - sets the coding type to MPEG-4 Part 2, as used by AMC (AXIS Media Control)

When using MPEG-4 it is also possible to control the bit rate, which in turn allows the amount of bandwidth usage to be controlled. CBR (Constant Bit Rate) is used to achieve a specific bit rate by varying the quality of the MPEG-4 stream. When using VBR (Variable Bit Rate), the quality of the video stream is kept as constant as possible, at the cost of a varying bit rate.

Notes:
- MPEG-4 is licensed technology. The AXIS 210/211 includes one viewing client license. Installing additional unlicensed copies of the viewing client is prohibited. To purchase additional licenses, contact your Axis reseller.
- All clients viewing the MPEG-4 stream must use the same set of coding tools.

MPEG-4 protocols and communication methods

To deliver live streaming video over IP networks, various combinations of transport protocols and broadcast methods are employed.

- RTP (Realtime Transport Protocol) is a protocol that allows programs to manage the real-time transmission of multimedia data, via unicast or multicast.
- RTSP (Real Time Streaming Protocol) serves as a control protocol, to negotiate which transport protocol to use for the stream. RTSP is thus used by a viewing client to start a unicast session, see below.
- UDP (User Datagram Protocol) is a communications protocol that offers limited service for exchanging data in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol (TCP). The advantage of UDP is that it is not required to deliver all data and may drop network packets when there is e.g. network congestion. This is suitable for live video, as there is no point in re-transmitting old information that will not be displayed anyway.
- Unicasting is communication between a single sender and a single receiver over a network. This means that the video stream goes independently to each user, and each user gets their own stream. A benefit of unicasting is that if one stream fails, it only affects one user.
- Multicast is bandwidth-conserving technology that reduces bandwidth usage by simultaneously delivering a single stream of information to multiple network recipients. This technology is used primarily on delimited networks (intranets), as each user needs an uninterrupted data flow and should not rely on network routers.

How to stream MPEG-4

Deciding on the combination of protocols and methods to use depends on your viewing requirements, and on the properties of your network. Setting the preferred method(s) is done in the control applet for AMC, which is found in the Windows Control Panel. When this has been set, AMC will test all the selected methods in the specified order, until the first functioning one is found.

RTP+RTSP

This method (actually RTP over UDP and RTSP over TCP) should be your first consideration for live video, especially when it is important to always have an up-to-date video stream, even if some images do get dropped. This can be configured as multicast or unicast.

Multicasting provides the most efficient usage of bandwidth, especially when there are large numbers of clients viewing simultaneously. Note however, that a multicast broadcast cannot pass a network router unless the router is configured to allow this. It is thus not possible to multicast over e.g. the Internet.

Unicasting should be used for video-on-demand broadcasting, so that there is no video traffic on the network until a client connects and requests the stream. However, as more and more unicast clients connect, the traffic on the network will increase and may cause congestion. Although there is a maximum of 20 unicast viewers, note that all multicast users combined count as 1 unicast viewer.

RTP/RTSP

This unicast method is RTP tunneled over RTSP. This can be used to exploit the fact that it is relatively simple to configure firewalls to allow RTSP traffic.

RTP/RTSP/HTTP

This method can also be used to traverse firewalls. Firewalls are commonly configured to allow the HTTP protocol, thus allowing RTP to be tunneled.

The AXIS Media Control

The recommended method of accessing live video (MPEG-4 and/or Motion JPEG) from the AXIS 210/211 is to use the AXIS Media Control (AMC) in Microsoft Internet Explorer for Windows. This ActiveX component is automatically installed on first use, after which it can be configured by opening the AMC Control Panel applet from the Windows Control Panel. Alternatively, right-click the video image in Internet Explorer.

Other methods of accessing the video stream

Video/images from the AXIS 210/211 can also be accessed in the following ways:

- If supported by the client, the AXIS 210/211 can use Motion JPEG server push to display video. This option maintains an open HTTP connection to the browser and sends data as and when required, for as long as required.
- As single JPEG images in a browser. Enter e.g. the path:
  http://<IP address>/axis-cgi/jpg/image.cgi?resolution=320x240
- Windows Media Player. This requires AMC and the MPEG-4 decoder to be installed. The paths that can be used are listed below in the order of preference.
- Unicast via RTP: axrtpu://<IP address>/mpeg4/media.amp
- Unicast via RTSP: axrtsp://<IP address>/mpeg4/media.amp
- Unicast via RTSP, tunneled via HTTP: axrtsphttp://<IP address>/mpeg4/media.amp
- Multicast: axrtpm://<IP address>/mpeg4/media.amp

Other MPEG-4 clients

Although it may be possible to use other clients to view the MPEG-4 stream, this is not guaranteed by Axis.

For some other clients, e.g. QuickTime™ the **Video Object Type** must be set to *Simple*. It may also be necessary to adjust the advanced MPEG-4 settings.

To assess the video stream from e.g. QuickTime™ the following path can be used:

rtsp://<IP address>/mpeg4/media.amp

This path is for all supported methods, and the client will negotiate with the AXIS 210/211 to determine exactly which transport protocol to use.

Setup Tools

This section describes how to configure the cameras, and is intended for product **Administrators**, who have unrestricted access to all the Setup tools, and **Operators**, who have access to the settings for Video & Image, Live View Config and Event Configuration.

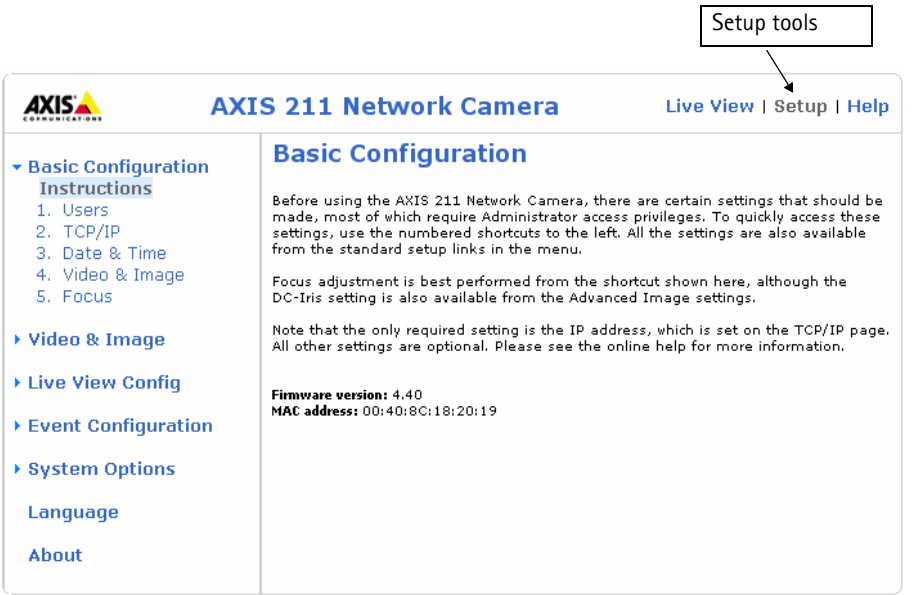
The camera is configured under **Setup** from a standard browser (see *Technical Specifications*, on page 45).

Accessing the Setup tools

Follow the instructions below to access the Setup Tools from a browser.

1. Start your browser and enter the IP address or host name of the cameras in the location/address field.

2. The **Live View** page is now displayed. Click **Setup** to display the **Setup** tools.


Setup tools
AXIS 211 Network Camera
Live View | Setup | Help
Basic Configuration
Instructions
1. Users
2. TCP/IP
3. Date & Time
4. Video & Image
5. Focus
Video & Image
Live View Config
Event Configuration
System Options
Language
About
Basic Configuration
Before using the AXIS 211 Network Camera, there are certain settings that should be made, most of which require Administrator access privileges. To quickly access these settings, use the numbered shortcuts to the left. All the settings are also available from the standard setup links in the menu.
Focus adjustment is best performed from the shortcut shown here, although the DC-Iris setting is also available from the Advanced Image settings.
Note that the only required setting is the IP address, which is set on the TCP/IP page. All other settings are optional. Please see the online help for more information.
Firmware version: 4.40
MAC address: 00:40:8C:18:20:19

Video & Image settings

The following descriptions offer examples of the features available in the AXIS 210/211. For details of each setting, please refer to the online help available from the setup tools. Click to access the online help.

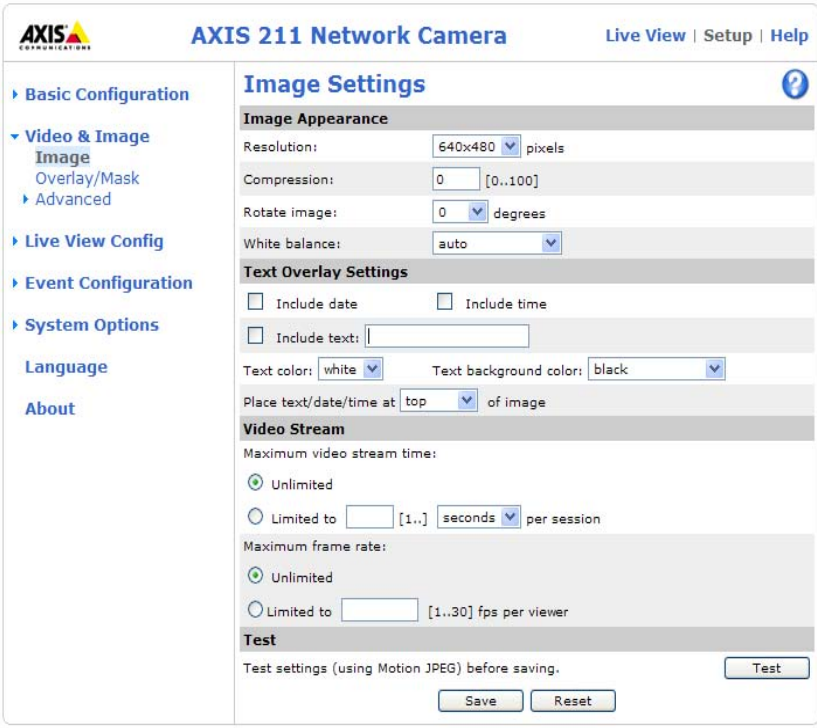


Image Settings

Image Appearance

Adjust these settings to optimize the video images according to your requirements.

All configuration of images and overlays will affect the camera's overall performance, depending on how it is used and on the available bandwidth. Lower compression improves video image quality, but increases the bandwidth.

The video image can be rotated and fine-tuned by adjusting the color level, the brightness, and the contrast. Please see the online help for further information on these settings.

Changed video image settings have immediate effect on the MPEG-4 stream, but the Motion JPEG stream will have to be started (or restarted) before the settings take effect.

Text Overlay Settings

Include date, time and/or text of your choice to be viewed on the image. The color of the text may be set to white or black, while background color may be set to white, black, transparent or semitransparent. The position of the text is set either to the top or the bottom of the image.

Video Stream

Define the maximum **video stream time** per session in seconds, minutes or hours. When the set time has expired, a new stream can be started by refreshing the page in the Web browser. For unlimited video stream time, set this value to 0. This setting is only applicable to Motion JPEG.

The **frame rate** allowed to each viewer can also be limited, to avoid bandwidth problems on the network.

Test

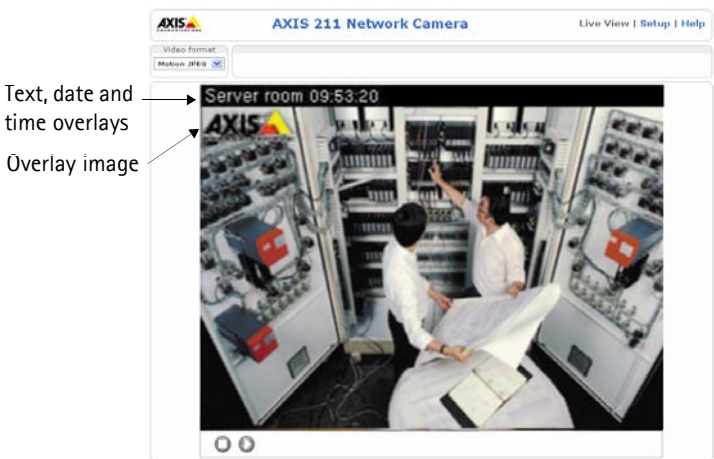
To preview the image before saving, click **Test**. Note that the preview image will be in JPEG format, even though the settings are valid both for Motion JPEG and MPEG-4.

Overlay/Mask Settings

Overlay/Mask Type

When using an image overlay, select from the following options the type to use:

- Uploaded image as overlay - usually used to provide extra information in the video image.
- Configurable areas as privacy masks - up to 3 areas are used to conceal parts of the video image.



The difference between an overlay and a privacy mask is that a privacy mask cannot be bypassed by accessing the video stream with the help of the AXIS HTTP API, whereas an overlay can.

Selecting the overlay/mask type will display further settings available for the selected type. See the online help for further information.

Upload and use an overlay

To upload an overlay image to the camera:

1. Select **Uploaded image as overlay** in the drop-down list for **Overlay/Mask Type**. New options appear.
2. In the field **Upload own image**, click the **Browse** button and locate the image file on your computer or server.
3. Click the **Upload** button and follow the on-screen instructions.

To use an already uploaded image:

1. Select an uploaded image from the **Use image** drop-down list.
2. Place the image at the required location by entering the x and y coordinates.
3. Click **Save**.

Overlay image requirements

Image Formats	Image Size
• Windows 24-bit BMP (full color) • Windows 4-bit BMP (16 colors)	The height and width of the overlay image in pixels must be exactly divisible by 4.

There are a number of limitations when using overlay images, such as the size and positioning of images. Please refer to the online help for more information.

Configure area as privacy mask

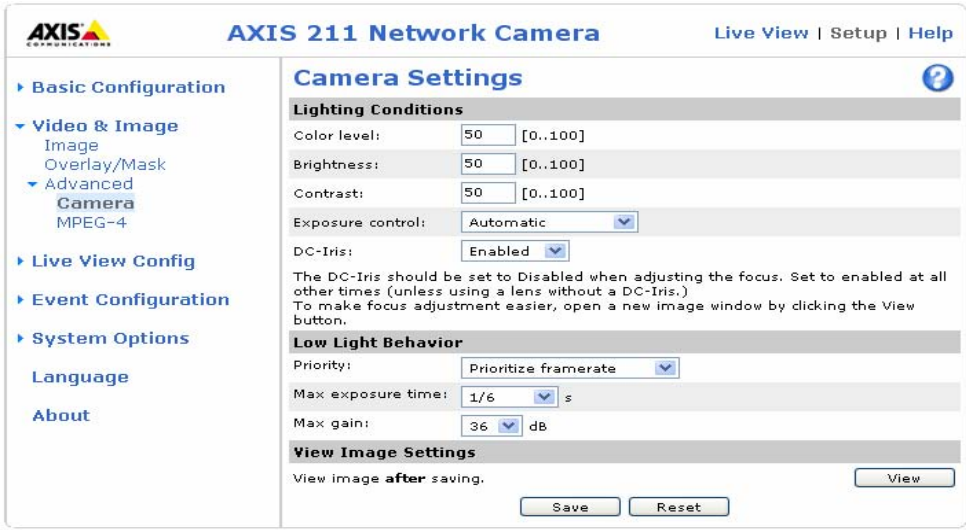
The 3 configurable areas available for use as privacy masks show as solid areas of color in the image. These areas cannot be bypassed via the AXIS HTTP API.

Enable the area(s) by checking the Enable box, and then set the width, height and color. Setting the coordinates x and y sets the position of the upper left corner of the area.

Advanced Settings

These pages provide various settings for fine-tuning the video image. Note that the advanced settings available depend on the camera model.

Camera Settings



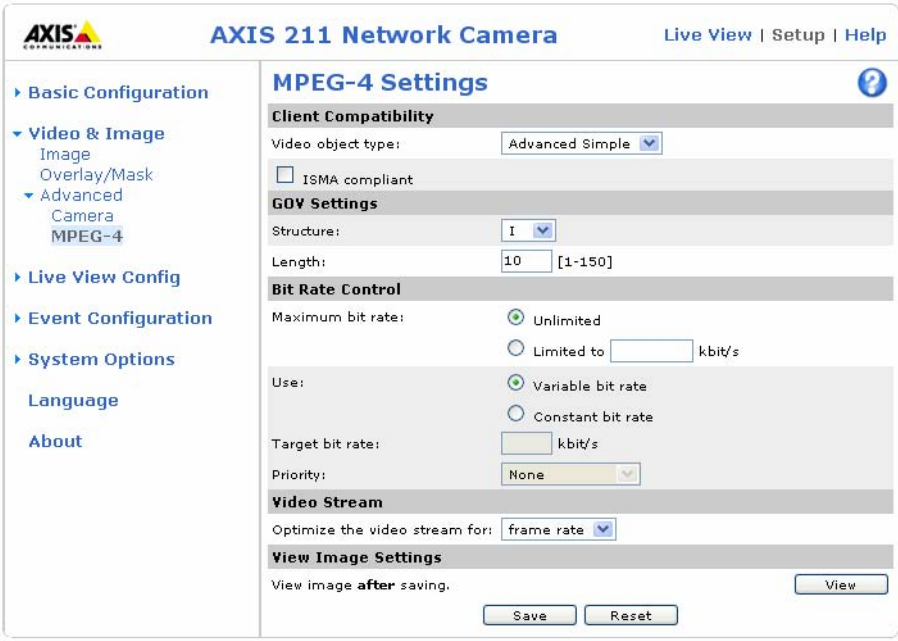
To compensate for the **lighting conditions,** the **white balance** and **exposure control** can be adjusted. If available, **DC-Iris** should always be enabled except during focusing, or when using a non-DC-Iris lens.

The settings for **Low-light behavior** determine how the cameras will behave at low light levels. These settings all affect video image quality and are basically a measure of how much noise to allow in the video images.

Please see the online help for further instructions on these settings.

MPEG-4 Settings

Tools for adjusting the MPEG-4 settings and for controlling the video bit rate.



The MPEG-4 standard provides many different coding tools for various applications in different situations. As most MPEG-4 clients do not support all of these tools, it is usual to instead define and use subsets for different clients or groups of clients. These settings allow you to define the type of viewing client to use.

Adjusting the maximum bit rate and setting it to a variable or constant is a good way of controlling the bandwidth used by the MPEG-4 video stream. For more information on these advanced settings, please see *Video Streams,* on page 14, and the online help.

AXIS Media Control

The AXIS Media Control (AMC) is installed automatically the first time the camera is accessed from a browser. The AMC control panel can be opened by right-clicking on the video image in the Live View web page. The AMC control panel can be used to configure various network, video settings such as:

- Network reconnection strategy, multicast network interface, and MPEG-4 connection order
- MPEG-2 and MPEG-4 video processing settings and default video decoder setting
- Video snapshot and recording settings
- Pan Tilt Zoom (PTZ) settings such as joy stick settings and PTZ mode settings

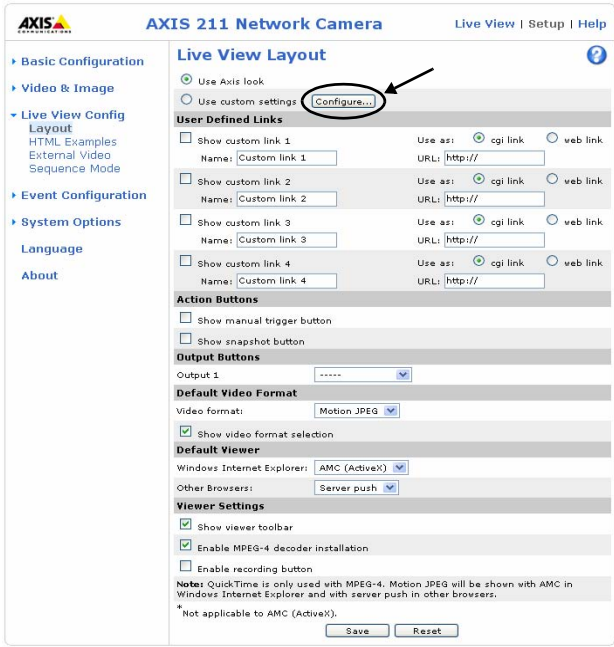
For more information, please see the AMC readme file included with AMC, or the *Axis Media Control (AMC) User Manual* available at www.axis.com.

Live View Config

These are the tools for deciding the layout of the camera's Live View page. The layout can be set in 3 ways:

- **Use Axis look** - the layout is unchanged.
- **Use custom settings** - modify the default **Live View** page with your own colors, images etc. Click the **Configure** button and see below.
- **Own Home Page** - Use your own custom page as the default web page. Click the **Configure** button and see the following page.

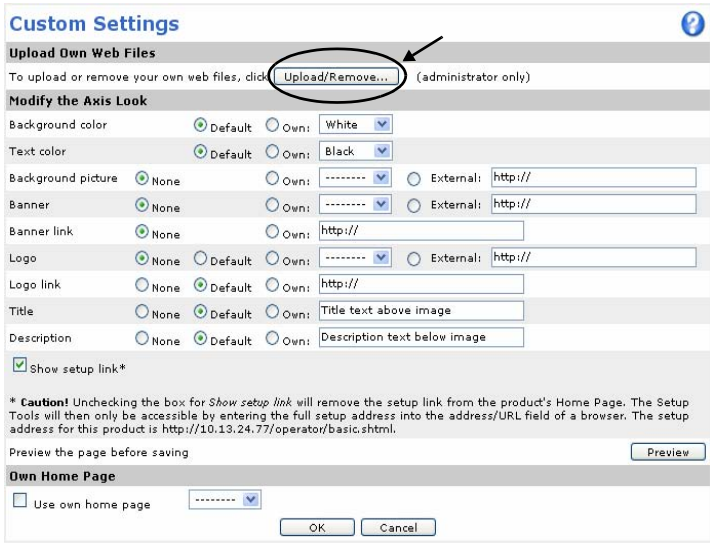
The other settings on this page concern which other features to include, e.g. buttons and links. See page 25 for more information.



Use custom settings

Adjust the settings under **Modify the Axis look**, to change the background picture, banner, colors, etc.

To use your own file for e.g. a banner, first upload it (see the following page) or select **External** and enter the path to the file.



Note that unchecking the box for **Show setup link** will remove the setup link from the camera's Home Page. The setup tools will then only be accessible by entering the full setup address into the address/URL field of a browser, i.e.

http://<IP address>/operator/basic.shtml

Upload Own Web Files

Your own background pictures, banners and logos can either be located externally on e.g. a network server, or they can be uploaded to the AXIS 210/211 itself. Once uploaded, files are shown in the drop-down lists for **Own** (file). Follow these instructions to upload a file.

1. Click the **Upload/Remove** button in the Custom settings dialog.
2. Enter the path to the file, e.g. a file located on your computer or click the **Browse** button.
3. Select the user level for the uploaded file. Setting the user access level means that you have complete control over which pages can be viewed by which users.
4. When the path is shown correctly in the text field, click the **Upload** button.

All uploaded files are shown in the list in the lower section of this dialog. To remove a file, check the box provided next to it and then click the **Remove** button.

Note: To use your own logo in the camera's web pages, the file must be in gif format and the file name must be in lower case e.g. mylogo.gif

Own Home Page

From Live View Layout, select the radio button **Use custom settings** and click **Configure**.

Check the box **Use own home page** at the bottom of this dialog, To use a previously uploaded web page (see above) as the default home page, select the page from the drop-down list and click OK.

User-defined Links

Enter a descriptive name and enter the URL in the provided field.

Example

1. Check **Show Custom Link 1**
2. Enter a descriptive name, e.g. **My Website**
3. Check the radio button for **web link.**
4. Enter the web link: e.g. http://www.example.com
5. Click **Save.**

This link will then be shown on the Live View page and will open the specified website.

User-defined CGI links can be used to issue advanced commands via the Axis HTTP API. For more information, see the Developer pages at www.axis.com/developer

Action Buttons

The manual trigger buttons can be used to manually trigger and stop an event from the Live View page. See *Event Configuration,* on page 29.

Enabling the display of the **Snapshot** button allows users to save a snapshot from the video stream by clicking the button. This button is mainly intended for use with browsers other than Internet Explorer for Windows, or when otherwise not using AXIS Media Control (AMC) to view the video stream. AMC (an ActiveX control) for Internet Explorer provides its own snapshot button.

Output Buttons

These buttons can then be used to manually activate the output from the Live View page, e.g. to switch a light on and off. There are 2 options for how the output is activated:

- The Pulse button activates the output for a defined period
- Active/Inactive displays 2 buttons, one for each action (on/off)

Default Video Format

Select the default format to use on the Live View page. Checking the box for Show video format selection displays a drop-down list on the Live View page allowing you to temporarily change the format.

Note: It is also possible to view Motion JPEG when MPEG-4 is chosen as default and vice versa.

Default Viewer

When using *Microsoft Internet Explorer (IE)* for Windows, select your preferred method of viewing moving images. The options are:

- **AMC(ActiveX)**- This is the best choice for fast image updating in Internet Explorer, but might not be possible on computers that have restriction on the installation of additional software.
- **QuickTime** - For use with MPEG-4 only, select this to use the QuickTime plug-in for Microsoft Internet Explorer.
- **Java applet** - This alternative uses a Java applet to update the images in the browser.
- **Still Image** - Displays still images only. Hit the **Refresh** button in your browser to view a new image.

When using any other browser than Internet Explorer for Windows, select the appropriate method from the drop-down list for viewing images. The available options are similar to Internet Explorer except for **Server Push.** With this method, the camera maintains and controls an open HTTP connection to the browser and sends data as and when required for as long as required.Please see the online help for more information.

Viewer settings

Checking the **Show viewer toolbar** displays the viewer toolbar under the video stream in your browser.

By checking the Enable MPEG-4 decoder installation box, it is also possible for the Administrator to enable or disable the installation of the MPEG-4 decoder. This is used to prevent the installation of unlicensed copies. Further decoder licenses can be purchased from your Axis dealer. See also *AXIS Media Control,* on page 23.

Check the record button to record the current video stream. The location where the image file is saved can be specified using the AMC Control Panel.

HTML Examples

You can add live video from the cameras to your own web site. The camera can transmit a Motion JPEG or unicast MPEG-4 stream to up to 20 simultaneous connections, although an administrator can restrict this to fewer. If multicast MPEG-4 is used, the video stream will be available to an unlimited number of viewers connected to the parts of the network where multicast is enabled. Please note that a separate MPEG-4 license is required for each viewer.

Enter the **Video Format**, **Image Type**, **Image size** and other settings to suit your Web page and click **Update.** The camera then generates the required source code for your configuration. Copy this code and paste it into your own Web page code.

External Video

The cameras can also display video images from other Axis network cameras and video servers, directly on the Live View page. These are known as **External Video** sources. These external video sources are available from the drop-down list on the Live View page.

Click the **Add** button to open the External Video Source Setup dialog, which is used to make all the necessary settings. Enter the IP address or host name of the external video source you wish to add. Depending on the external source, then select either MPEG-2, MPEG-4 or Motion JPEG as the type of video stream to receive.

Example of a path to an external video source:

```
http://192.168.0.125/axis-cgi/mjpeg/video.cgi
```

Sequence Mode

The Live View page can be configured to rotate through the internal and selected external video sources, in order, or randomly.

Select the desired video sources and enter the time in seconds to display each source (up to 59 minutes). Click **Save**.

The Sequence buttons will appear on the Live View page to enable the viewer to start and stop the sequence mode.

Please see the online help for more information.

Event Configuration

An **event** in the camera is when an **Event Type** is activated and causes certain actions to be performed. The event type is the set of parameters (or conditions) that specifies how and when which actions will be performed. A common event type is when the camera uploads images when an alarm occurs. Many event types use an **Event Server**, to e.g. upload images to.

This section describes how to set up event servers and event types, i.e. how to configure the cameras to perform certain actions when events (e.g. alarms) occur.

Definitions

Event type	A set of parameters describing how and when the camera will perform certain actions	
Triggered Event - see page 30	The circumstances that start an event.	E.g. on a signal from an external device, such as a door switch or a motion sensor.
Scheduled Event - see page 31	The circumstances that start an event.	E.g. at a pre-programmed time.
Action	What occurs when the event triggers.	E.g. the upload of images to an FTP server, e-mail notification, etc.

Event Servers

Event Servers are used to receive e.g. uploaded image files and/or notification messages. To set up Event server connections in your cameras, go to **Setup > Event Configuration > Event Servers** and enter the required information for the required server type.

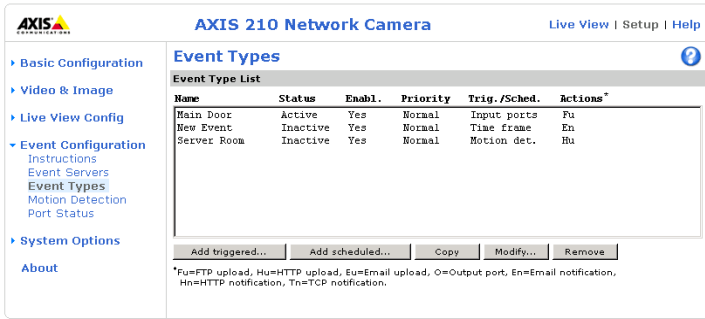
Server type	Purpose	Information required
FTP Server	• Receives uploaded images	• Descriptive name of your choice • Network address (IP address or host name) • User Name and Password (for FTP server) • Upload path e.g. images/ • Port number • Use passive mode if there is a firewall between the camera and FTP server • Use temporary file if your FTP server doesn't allow an existing file to be overwritten by a new file with the same name
HTTP Server	• Receives notification messages • Receives uploaded images	• Descriptive name of your choice • URL (IP address or host name) • User Name and Password (for HTTP server) • Proxy address/Proxy port (if required) • Proxy User Name and Password (if required)
TCP Server	• Receives notification messages	• Descriptive name of your choice • Network address (IP address or host name) • User Name and Password (for TCP server) • Port number

For details on each setting, please see the online help available from each web page.

When the setup is complete, the connection can be tested by clicking the **Test** button (the connection test takes approximately 10 seconds).

Configuring Event Types

An **Event Type** describes how and when the camera will perform certain actions.



Example: If somebody passes in front of the camera and an event that uses motion detection has been configured to act on this, the camera can e.g. record and save images to an FTP server, and/or send a notification e-mail to a pre-configured e-mail address with a pre-configured message. Images can be sent as e-mail attachments.

Triggered Event

A Triggered event can be activated by e.g:

- a push button connected to the camera's input port
- detected movement in a configured motion detection window
- a manually activated action, e.g. from an action button in the web interface
- on restart (reboot) after e.g. power loss

How to set up a triggered event

This example describes how to set up the camera to upload images when e.g the main door is opened:

1. Click **Add triggered** on the **Event types** page.
2. Enter a descriptive **name** for the event, e.g. Main door open.
3. Set the **priority** - High, Normal or Low (see the online help).
4. Set **min time interval between triggers** - This is the minimum time period that the event type must wait after a trigger before it will be possible to trigger it again. The interval commences as soon as the first trigger occurs. The shortest possible interval is 1 second and the longest is 23 hours, 59 minutes and 59 seconds. To not use a minimum interval, set this option to 00:00:00
5. Set the **Respond to Trigger...** parameters for when the event will be active, e.g. only after office hours.
6. Select the trigger alternative from the **Triggered by...** drop-down list, e.g. select Input ports, for a sensor connected to the door.
7. Set the **When Triggered...** parameters, i.e. define what the camera will do if the main door is opened e.g., upload images to an FTP server or send an e-mail notification.
8. Click **OK** to save the Event in the Event Types list.

Please see the online help for descriptions of each available option.

Note: Up to 10 event types can be configured in the cameras, and up to 3 of these can be configured to upload images. Files names can be formatted according to specific requirements. See File Naming & Date/Time Formats online help.

Pre-trigger and Post-trigger buffers

This function is very useful when checking to see what happened immediately before and/or after a trigger, e.g. 5 seconds before and/or after a door was opened. Check the **Upload images** checkbox under **Event Types > Add Triggered... > Triggered by...** to expand the web page with the available options. All uploaded images are JPEG images.

Include pre-trigger buffer - images stored internally in the server from the time immediately preceding the trigger. Check the box to enable the pre-trigger buffer, enter the desired length of time and specify the required image frequency.

Include post-trigger buffer - contains images from the time immediately after the trigger. Configure as for pre-trigger.

Notes:
- Pre-trigger and Post-trigger buffers will be lost if the connection to the event server fails.
- The maximum length of the pre-/post-buffer depends on the video image size and selected frame rate.
- If the pre- or post-buffer is too large for the camera's internal memory, the frame rate will be reduced and individual images may be missing. If this occurs, an entry will be created in the unit's log file.

Continue image upload (unbuffered) - enables the upload of video images for a fixed length of time. Specify the length of time for the uploaded recording, in seconds, minutes or hours, or for as long as the trigger is active. Finally, set the desired image frequency to the maximum (the maximum available) or to a specified frame rate. The frame rate will be the best possible, but might not be as high as specified, especially if uploading via a slow connection.

Scheduled Event

A **Scheduled event** can be activated at preset times, in a repeating pattern on selected weekdays.

Configuration example:

1. Click **Add scheduled** on the **Event types** page.
2. Enter a descriptive **name** for the event, e.g. “Scheduled e-mail upload.”
3. Set the **priority** (High, Normal or Low).
4. Set the **Activation Time** parameters (24h clock) when the event will be active, e.g. start on Sundays at 13.00 with a duration of 12 hours.
5. Set the **When Activated...** parameters, i.e. set what the camera will do at the specified time, e.g. send uploaded images to an e-mail address.
6. Click **OK** to save the Event in the Event Types list.

Please see the online help for descriptions of each available option.

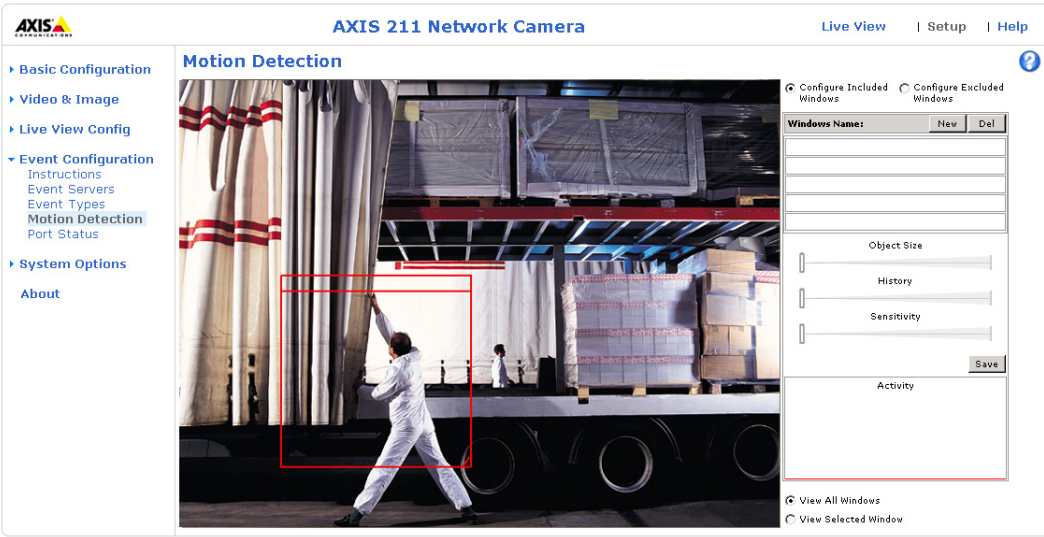
Motion Detection

Motion detection is used to generate an alarm whenever movement occurs (or stops) in the video image. A total of 10 Include and/or Exclude windows can be configured.

- **Included** windows target specific areas within the whole video image
- **Excluded** windows define areas within an Include window that should be ignored (areas outside Include windows are automatically ignored)

Once configured, the motion detection windows will appear in the list of available triggers, for triggering events. See "*How to set up a triggered event*" on page 30.

Note: Using the motion detection feature may decrease the camera's overall performance.



Configuring Motion Detection

1. Click **Motion Detection** in the **Event Configuration** menu.
2. Click the **Configure Included Window** radio button.
3. Click **New**.
4. Enter a descriptive name under **Window name**.
5. Adjust the size (drag the bottom right-hand corner) and position (click on the text at the top and drag to the desired position).
6. Adjust the Object size, History and Sensitivity profile sliders (see table below for details). Any detected motion within an active window is then indicated by red peaks in the **Activity** window (the active window has a red frame).

7. Click **Save**.

> To exclude parts of the Include window, click the **Configure Excluded Windows** button and position the Exclude window as required, within the Include window.

Please see the online help for descriptions of each available option.

	Object Size	History	Sensitivity
High level	Only very large objects trigger motion detection	An object that appears in the region will trigger the motion detection for a long period	Ordinary colored objects on ordinary backgrounds will trigger the motion detection
Low level	Even very small objects trigger motion detection	An object that appears in the region will trigger motion detection for only a very short period	Only very bright objects on a dark background will trigger motion detection
Default value	Low	Medium to High	Medium to High

Examples:

- Avoid triggering on small objects in the video image by setting the **object size** level to high.
- To reduce the number of triggers if there is a lot of movement during a short period of time, select a high history level.
- To only detect flashing light, low **sensitivity** can be selected. In other cases, a high **sensitivity** level is recommended.

Port Status

Under **Event Configuration > Port Status** there is a list showing the status for the cameras's input and output. This is for the benefit of **Operators**, who have no access to the System Options section.

Example: If the Normal state for a push button connected to an input is set to **Open circuit –** as long as the button is not pushed, the state is **inactive**. If the button is pushed, the state of the input changes to **active**.

System Options

Security

User access control is enabled by default, when the administrator sets the root password on first access. An administrator can set up other users, by giving these user names and passwords. It is also possible to allow anonymous viewer login, which means that anybody may access the Live View page, as described below:

Users - the **user list** displays the authorized users and user groups (levels):

Viewer	Provides the lowest level of access, which only allows access to the Live View page.
Operator	An operator can view the Live View page, create and modify event types and adjust certain other settings. Operators have no access to the System Options.
Administrator	An administrator has unrestricted access to all the setup tools and can determine the registration of all other users.

User Settings - check the relevant checkboxes to enable:

- **Anonymous viewer login** - allows any viewer direct access to the Live View page.
- **Maximum number of simultaneous viewers** - enter a value here to restrict the number of unicast viewers accessing the unit. This is useful if you need to save on bandwidth. (Note that all multicast viewers count as 1 viewer.)

IP Address Filtering

Enable IP Address Filtering- To allow or deny access to the AXIS 210/211 Network Camera check the box **Enable IP address filtering.** Once enabled, the IP addresses in the list will be allowed or denied access according to the choice made in the drop-down list Allow/Deny the following IP addresses.

The administrator can add up to 256 IP address entries to the list (a single entry can contain multiple IP addresses). The users from these IP addresses need to be specified in the user list with the appropriate access rights. This is done from **Setup > System Options > Security > Users.**

Referrals

To prevent unauthorized clients from including the video stream from the cameras into external Web pages, check the **Referrals** checkbox and enter the IP address or Host name of the computer that hosts the Web pages with the included video stream. Several IP addresses/host names can be defined and are separated by semicolons (;). This option is only applicable to Motion JPEG video streams.

Notes:
- If the referrals feature is enabled and you wish to also allow normal access to the Live View page, the product's own IP address or host name must be added to the list of allowed referrers.
- Restricting referrers has no effect on an MPEG-4 video stream. To restrict an MPEG-4 stream, IP address filtering must be enabled.
- Restricting referrers is of greatest value when not using IP address filtering. If IP address filtering is used, then the allowed referrers are automatically restricted to those allowed IP addresses.

Date & Time

Current Server Time - displays the current date and time (24h clock). The time can be displayed in 12h clock format in the Overlay Images (see below).

New Server Time - Select your time zone from the drop-down list. If you want the server clock to automatically adjust for daylight savings time, select the **Automatically adjust for daylight saving time changes.**

From the **Time Mode** section, select the preferred method to use for setting the time:

- **Synchronize with computer time** - sets the time from the clock on your computer.
- **Synchronize with NTP Server** - the camera will obtain the time from an NTP server every 60 minutes. The **NTP server**'s IP address or host name must be specified in the **TCP/IP Advanced Settings** - see page 36.
- **Set manually** - this option allows you to manually set the time and date.

Note: Note that if using a host name for the NTP server, a DNS server must be configured under **TCP/IP** settings. See **Network > TCP/IP** below.

Date & Time Format Used in Images - specify the formats for the date and time (12h or 24h) displayed in the Live View video streams.

Use the predefined formats or use your own custom date and time formats. See **Advanced File Naming & Date/Time Formats** in the help files for information on how to create your own file formats.

Network - Basic TCP/IP Settings

IP Address Configuration

Your Axis network camera supports both IP version 4 and IP version 6. Both versions may be enabled simultaneously, and at least one version must always be enabled.

When using IPv4, the IP address can be set automatically via DHCP, or a static IP address can be set manually.

If IPv6 is enabled, your camera will receive an IP address according to the configuration in the network router.

There are also options for setting up notification of changes in the IP address, and for using the AXIS Internet Dynamic DNS Service. For more information on setting the IP address, please see the online help.

Notes:

- DHCP is a protocol for automatic IP address assignment on a network. IP address assignment via DHCP may lead to the situation where the IP address changes and you lose contact with the camera. Configure the options for notification of IP address change (under Services) to receive notification from the camera when the IP address changes.
- Alternatively, if your DHCP server can update a DNS server, you can access the AXIS 210/211 by host name which is always the same, regardless of the IP address.

Services

Options for notification of IP address change - if the IP address for the video server changes, e.g. automatically by DHCP, you can choose to be notified of the change. Click **Settings...** and enter the required information.

AXIS Internet Dynamic DNS Service - If the AXIS 210/211 has been registered with the Axis Internet Dynamic DNS service and the IP address for the product changes, the service is updated to reflect the change. Check the box to enable/disable automatic updates.

The domain name currently registered at the Axis Internet Dynamic DNS service for your product can at any time be removed. To do this click **Settings...** and follow the instructions. For more information, please refer to the online help

Network - Advanced TCP/IP Settings

DNS Configuration

DNS (Domain Name Service) provides the translation of host names to IP addresses on your network.

Obtain DNS server address via DHCP - automatically use the DNS server settings provided by the DHCP server. Click the View button to see the current settings.

Use the following DNS server address - enter the desired DNS server by specifying the following:

Domain name - enter the domain(s) to search for the host name used by the AXIS 210/211. Multiple domains can be separated by semicolons (;). The host name is always the first part of a Fully Qualified Domain Name, e.g. **myserver** is the host name in the Fully Qualified Domain Name **myserver.mycompany.com** where mycompany.com is the Domain name.

DNS servers - enter the IP addresses of the primary and secondary DNS servers.

NTP Configuration

The AXIS 210/211 can obtain the correct time from an NTP server. The address for the NTP server can either be obtained via the DHCP server, or it can be entered manually.

Host Name Configuration

The AXIS 210/211 can be accessed using a host name, instead of an IP address. The host name is usually the same as the assigned DNS Name.

For more information, please see the online help

Link-Local Address

This is enabled by default and assigns the AXIS 210/211 an additional IP address for use with UPnP™. The AXIS 210/211 can have both a Link-Local IP and a static/DHCP-supplied IP address at the same time - these will not affect each other.

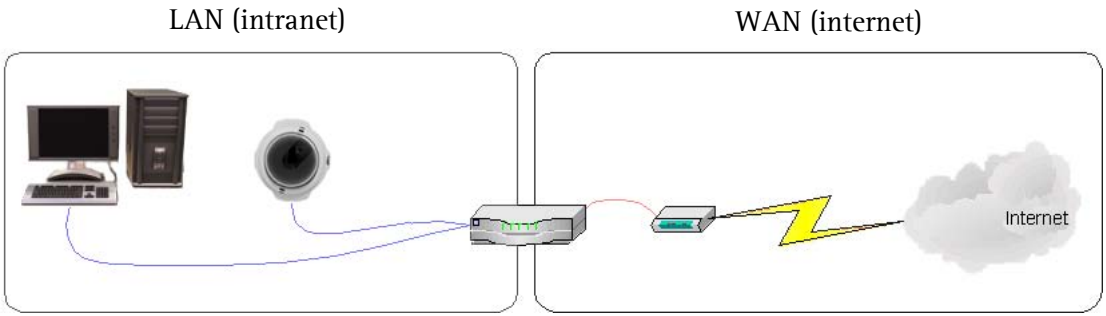
HTTP

The default HTTP port number (80) can be changed to any port within the range 1024-65535. This is useful for e.g. simple security port mapping.

NAT Traversal (port mapping)

A broadband router allows devices on a private network (LAN) to share a single connection to the Internet. This is done by forwarding network traffic from the private network to the "outside" i.e. the Internet. Security on the private network (LAN) is increased since most broadband routers are pre-configured to stop any attempts to access the private network (LAN) from the public network/Internet.

Use **NAT traversal** when your AXIS 210/211 is located on an intranet (LAN) and you wish to make it available from the other (WAN) side of a NAT router. With NAT traversal properly configured, all HTTP traffic to an external HTTP port in the NAT router will be forwarded to the camera.



Notes:
- For NAT traversal to work, this must also be supported by the broadband router.
- The broadband router has many different names: "NAT router", "Network router", Internet Gateway", "Broadband sharing device" or "Home firewall" but the essential purpose of the device is the same.

Enable/Disable - When enabled, the AXIS 210/211 will attempt to configure port mapping in a NAT router on your network, using UPnP™. Note that UPnP™ must be enabled in the camera (see **System Options > Network > UPnP**).

Use manually selected NAT router - Select this option to manually select a NAT router and enter the IP address for the router in the field provided.

If a router is not manually specified, the AXIS 210/211 will automatically search for NAT routers on your network. If more than one router is found, the default router will be selected.

Alternative HTTP port - Select this option to manually define an external HTTP port. Enter the port number in the field provided. If no port is entered here a port number will automatically be selected when NAT traversal is enabled.

Notes:
- An alternative HTTP port can be used/be active even if NAT traversal is disabled. This is useful if e.g. your NAT router does not support UPnP and you need to manually configure port forwarding in the NAT router.
- If you attempt to manually enter a port that is already in use, another available port will automatically be selected.
- When the port is selected automatically it will be displayed in this field. This can be changed by entering a new port number and clicking Save.

RTSP

The RTSP protocol allows a connecting client to start an MPEG-4 stream. Enter the RTSP port number to use. The default setting is 554.

FTP

The FTP server running in the AXIS 210/211 enables the upload of e.g. new firmware, user applications, etc. Check the box to enable the service.

Network Traffic

The default setting is **Auto-negotiate** which means that the correct speed is automatically selected. If necessary, you can set the connection speed by selecting it from the drop-down list.

Maximum bandwidth - Specify, in Mbit/s or kbit/s, the maximum bandwidth the AXIS 210/211 will be allowed to use on your network. This is a useful function when connecting the camera to busy or heavily loaded networks. The default setting is **Unlimited**.

Note: When using MPEG-4 as the video format, remember that setting a maximum bandwidth value here may create problems for individual video streams if the maximum value is less than the sum of the bit rates set for the video streams.

For more information, please see the online help .

Network - SOCKS

SOCKS is a network proxy protocol. The cameras can be configured to use a SOCKS server to reach networks on the other side of a firewall/proxy server. This functionality is useful if the camera is located on a local network behind a firewall, but notifications, uploads, alarms, etc., need to be sent to a destination outside the local network (e.g. to the Internet).

Network - SMTP (e-mail)

Enter the host names or addresses for your primary and secondary mail servers in the fields provided, to enable the sending of event and error e-mail messages from the camera to predefined addresses via SMTP.

QoS (Quality of service)

Quality of Service (QoS) provides the means to guarantee a certain level of a specified resource to selected traffic on a network. Quality can be defined as e.g. a maintained level of bandwidth, low latency, no packet losses, etc. The main benefits of a QoS-aware network can be summarized as:

- The ability to prioritize traffic and thus allow critical flows to be served before flows with lesser priority.
- Greater reliability in the network, thanks to the control of the amount of bandwidth an application may use, and thus control over bandwidth races between applications.

The QoS in Axis network video products marks the data packets for various types of network traffic originating from the product. This makes it possible for network routers and switches to e.g. reserve a fixed amount of bandwidth for these types of traffic. The AXIS 210/211 marks the following types of traffic:

- video
- event/alarm
- management network traffic.

QoS Settings

For each type of network traffic supported by your Axis network video product, enter a DSCP (Differentiated Services Codepoint) value. This value is used to mark the traffic's IP header. When the marked traffic reaches a network router or switch, the DSCP value in the IP header tells the router or switch which type of treatment to apply to this type of traffic, for example, how much bandwidth to reserve for it.

Note that DSCP values can be entered in decimal or hex form, but saved values are always shown in decimal.

For more infomation on Quality of Service, please see the Axis support web at www.axis.com/techsup

Network - UPnP™

The cameras includes support for UPnP™, which is enabled by default. If also enabled on your computer, the camera will automatically be detected and a new icon will be added to "My Network Places."

Note: UPnP must also be enabled on your Windows XP computer. To do this, open the Control Panel from the **Start Menu** and select **Add/Remove Programs**. Select **Add/Remove Windows Components** and open the **Networking Services** section. Click **Details** and then select **UPnP** as the service to add.

Network - RTP / MPEG-4

These settings are for the IP addresses, port numbers, and Time-To-Live values to use for media streams in the MPEG-4 format. Only certain IP addresses and port numbers should be used for these streams. For more information, please see the online help.

Bonjour

Your Axis network camera includes support for Bonjour. When enabled, the camera is automatically detected by operating systems and clients that support this protocol.

Ports & Devices

I/O Ports - the pinout, interface support and the control and monitoring functions provided by this connector are described in *The I/O Terminal Connector*, on page 43.

LED Settings

The Status indicator LED on the front of the camera can be set to flash at a configurable interval (or to not light up at all) whenever the unit is accessed. For a listing of all LED behavior, see page 8, or the online help.

Note: The LED does not flash when the stream is retrieved using MPEG-4 multicast.

Maintenance

- **Restart** - The camera is restarted without changing any of the settings. Use this method if the unit is not behaving as expected.
- **Restore** - The unit is restarted and most current settings are reset to factory default values. The settings that will not be reset are as follows:
  - the boot protocol (DHCP or static)
  - the static IP address
  - the default router
  - the subnet mask

- the system time

- **Default** - The default button should be used with caution. Pressing this will return **all** of the camera's settings (including the IP address) to the factory default values.

Upgrade Server - See *Upgrading the Firmware*, on page 50.

Backup - To take a backup of all of the parameters, and any user-defined scripts, click this button. If necessary, it will then be possible to return to the previous settings, if settings are changed and there is unexpected behavior.

Restore - click the **Browse** button to locate the saved backup file (see above) and then click the **Restore** button. The settings will be restored to the previous configuration.

Note: **Backup** and **Restore** can only be used on the same unit running the same firmware. This feature is not intended for the configuration of multiple units or for firmware upgrades.

Support

The **Support Overview** page provides valuable information on troubleshooting and contact information, should you require technical assistance.

System Overview - is a quick look over the camera's status and settings. Information that can be found here includes the camera's Firmware version, IP address, Security, Event and Image settings and Recent log items. Many of the captions are also links to the proper **Setup page** to conveniently make adjustments in the cameras settings.

Logs & Reports - when contacting Axis support, please be sure to provide a valid Server Report with your query.

Information - The **Log file**, the **Server Report** and the **Parameter List** all provide valuable information for troubleshooting and when contacting Axis support.

Configuration

Log Level for Log Files - from the drop-down list, select the level of information to be added to the Log file

Log Level for E-mail - from the drop-down list, select the level of information to send as e-mail and enter the destination e-mail address.

Advanced

Scripting - this an advanced function that provides the means for customizing and using scripts.

Caution!
The scripting function is a very powerful tool. Improper use may cause unexpected behavior or even loss of contact with the unit. If a script does cause problems, reset the unit to its factory default settings (in which case, a previously saved backup file will be useful for returning the unit to its latest configuration). **Axis strongly recommends that you do not use this function unless you fully understand the consequences.** Axis support provides no assistance for customized scripts.

For more information, please visit the Developer pages at www.axis.com/developer

Plain Config - this function is for the advanced user with previous experience of configuring Axis cameras. All parameters can be set and modified from this page. Help is available via the links on the standard setup pages.

Resetting to the Factory Default Settings

To reset the cameras to the original factory default settings, go to the **System Options > Maintenance** web page (as described in *Maintenance,* on page 40) or use the **Control button** on the underside of the camera (see page 7) as described below:

Using the Control Button

To reset the cameras to the factory default settings using the Control Button:

1. Disconnect the power adapter, or the network cable if using PoE (AXIS 211 only).
2. Press and hold the Control button while reconnecting the power.
3. Keep the Control button pressed until the **Status Indicator** color changes to amber (this may take up to 15 seconds).
4. Release the Control button.
5. When the Status Indicator changes to Green (which may take up to 1 minute), the process is complete and the cameras has been reset. The unit will now have the default IP address 192.168.0.90

The I/O Terminal Connector

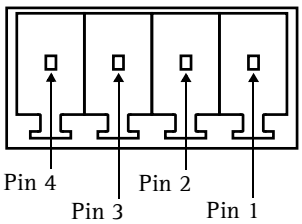
Pinout and Interface

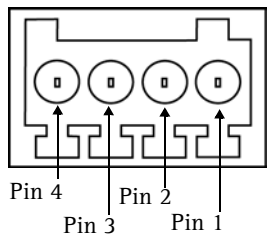
The 4-pin I/O terminal connector provides the interface to:

- 1 transistor output
- 1 digital input
- auxiliary power and GND

The terminal connector is used in applications for e.g. motion detection, event triggering, time lapse recording, alarm notification via e-mail, image storage to FTP locations, etc.

- **Input** - for connecting e.g. a push button. If the push button is pressed, the **state** changes and the input becomes active (shown under **Event Configuration > Port Status**).
- **Output** - connects e.g. an alarm device that can be activated by Output buttons on the **Live View** page, or by an **Event Type**. The output will show as **active** (**Event Configuration > Port Status**) if the alarm device is activated.





Pin	Function	Description
4	Transistor Output	With a maximum load of 100mA and a maximum voltage of 24V DC, this output has an open-collector NPN transistor with the emitter connected to pin 1 (GND). If used with an external relay, a diode must be connected in parallel with the load, for protection against voltage transients.
3	Digital Input	Connect to GND to activate, or leave floating (or unconnected) to deactivate.
2	Auxiliary DC Power Input	7-20 VDC/max 5W. Electrically connected in parallel with the PS-K power connector, this pin provides an auxiliary connector for mains power to the unit. If the unit is powered via this pin, a fuse should be used (rating: 1A Slow). This pin can also be used to power auxiliary equipment, max 100mA, but note that this is not possible when the AXIS 211 is powered by PoE.
1	GND	

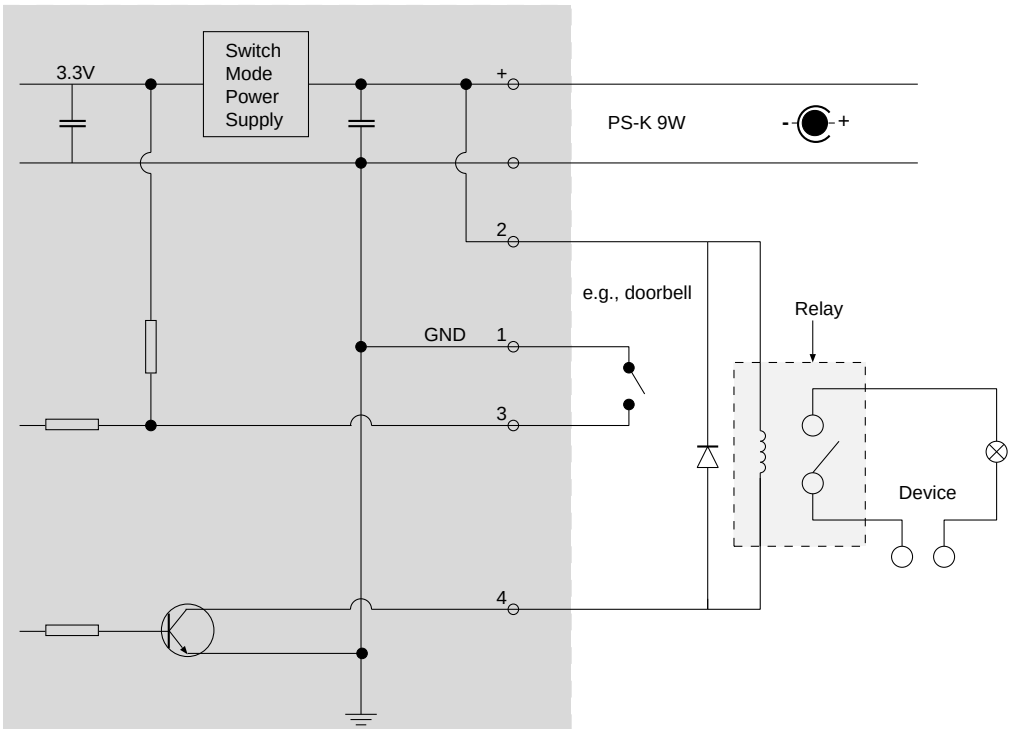
Connect input/output devices to the terminal connector as follows:

1. Loosen the corresponding screw on top of the pin (see above for the correct pin to

use).

2. Push the cable into the connector and secure it by fastening the screw.
3. Once devices are connected, connect the terminal connector to the camera, making sure that all cables are securely fastened.

Schematic Diagram - Terminal Connectors



Technical Specifications

Item	Specification
Models	• AXIS 210: indoor use only • AXIS 211: Power over Ethernet, DC-Iris
Image sensor	1/4" Sony Wfine progressive scan RGB CCD
Lens	• AXIS 210: 4.0 mm, F1.2, fixed iris, CS mount • AXIS 211: 3.0 - 8.0 mm, F1.0, DC-iris, CS mount
Agle of view	• AXIS 210: 48° horizontal • AXIS 211: 27°-67° horizontal
Minimum illumination	• AXIS 210: 1.0 lux, F1.2 • AXIS 211: 0,75 lux, F1.0
Video compression	• Motion JPEG • MPEG-4 Part 2 (ISO/IEC 14496-2), Profiles: ASP and SP
Resolutions	16 resolutions from 640 x 480 to 160 x 120 via API, 5 selections via configuration web page.
Frame rate	• Motion JPEG: Up to 30 fps in all resolutions • MPEG-4: Up to 25 fps at 640x480 Up to 30 fps at 480x360 or lower
Video streaming	• Simultaneous Motion JPEG and MPEG-4 • Controllable frame rate and bandwidth • Constant and variable bit rate (MPEG-4)
Image settings	• Compression levels: 11 (Motion JPEG)/23 (MPEG-4) • Rotation: 90°, 180°, 270° • Configurable color level, brightness, contrast, exposure, white balance, fine tuning of behavior at low light • Overlay capabilities: time, date, privacy mask, text or image
Shutter time	2 sec to 1/12500 sec
Security	• Multiple user access levels with password protection • IP address filtering
Users	• 20 simultaneous users • Unlimited users using multicast (MPEG-4)
Language support (Web interface)	• English. Downloadable language files for French, German, Italian, Japanese and Spanish are available at www.axis.com/techsup. • Other language files may also be available
Alarm and event management	• Events triggered by built-in motion detection, external input or according to a schedule • Image upload over FTP, email and HTTP Notification over TCP, email, HTTP and external output • Pre- and post alarm buffer: up to 1.2 MB (up to 40 sec of 320x240 video at 4 frames per sec)
Connectors	• RJ-45 for Ethernet 10BaseT/100BaseTX • Terminal block for 1 alarm input, 1 output and alternative power connection
Casing	• Plastic

Item	Specification
Processors and memory	• CPU: ETRAX 100LX 32bit • Video processing and compression: ARTPEC-2 • RAM: 16 MB • Flash: 4 MB • Battery backed up real-time clock
Power	• 7-20 V DC max 7 W • AXIS 211: PoE IEEE802.3af Class 2
Operating conditions	• 5 - 45 °C (41 – 113 °F) • Humidity 20 - 80% RH (non-condensing)
Installation, management and maintenance	• AXIS Camera Management tool on CD and web-based configuration • Configuration of backup and restore • Firmware upgrades over HTTP or FTP, firmware available at www.axis.com
Video access from Web browser	• Camera live view, • Video recording to file (ASF), • Sequence tour for up to 20 external Axis video sources, • Customizable HTML pages
Minimum web browsing requirements	• Pentium III CPU 500 MHz or higher, or equivalent AMD,128 MB RAM, AGP graphics card 32 MB RAM, Direct Draw • Windows XP, 2000, 2003 Server, DirectX 9.0 or later Internet Explorer 6.x or later • For other operating systems and browsers see www.axis.com/techsup
System integration support	• Open API for application integration including AXIS VAPIX API*, AXIS Media Control SDK*, event trigger data in video stream • Quality of Service (QoS) Layer 3, DiffServ Model Embedded Linux operating system * Available at www.axis.com
Supported protocols	IPv4/v6, HTTP, TCP, QoS, RTSP, RTP, UDP, IGMP, RTCP, SMTP, FTP, ICMP DHCP, UPnP, Bonjour, ARP, DNS, DynDNS, SOCKS More information on protocol usage available at www.axis.com
Included accessories	• Power supply 9 V DC, • Stand, • Connector kit, • Installation Guide, • CD with installation tool, software and User's Manual, • MPEG-4licenses (1 encoder, 1 decoder), • MPEG-4 decoder (Windows)
Video management software (not incl.)	• AXIS Camera Station - Surveillance application for viewing, recording and archiving up to 25 cameras See www.axis.com/partner/adp_partners.htm for more software applications via partners
Accessories (not incl.)	• Housings for adverse indoor/outdoor environments • Power over Ethernet midspans • AXIS 292 Network Video Decoder • MPEG-4 Decoder multi-user license pack

Item	Specification
Approvals	• EN 55022 Class B, • EN 61000-3-2, • EN 61000-3-3 • EN 55024, • FCC Part 15 Subpart B Class B, • ICES-003 Class B • VCCI Class B, • C-tick AS/NZS 3548, • EN 60950 • Power supply: EN 60950, UL, cUL
Dimensions (HxWxD) and weight	• AXIS 210: 38 x 88 x 157 mm (1.5" x 3.4" x 6.2") • AXIS 211: 38 x 95 x 178 mm (1.5" x 3.7" x 7.0") • 250 g (0.55 lb) excl. power supply

General performance considerations

When setting up your system, it is important to consider how various settings and situations will affect performance. Some factors affect the amount of bandwidth (the bit rate) required, others can affect the frame rate, and some will affect both. If the load on the CPU reaches its maximum, this will also affect the frame rate.

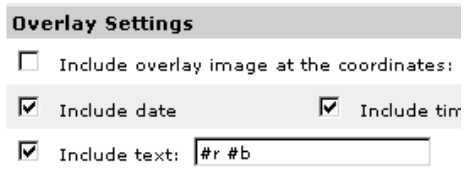
The following factors are among the most important to consider:

- High image resolutions and/or lower compression levels result in larger images. Bandwidth affected.
- Access by large numbers of Motion JPEG and/or unicast MPEG-4 clients. Bandwidth affected.
- Simultaneous viewing of different streams (resolution, compression, etc.) by different clients. Frame rate and bandwidth affected.
- Accessing both Motion JPEG and MPEG-4 video streams simultaneously. Frame rate and bandwidth affected.
- Heavy usage of event settings affects the camera's CPU load. Frame rate affected.
- Enabled motion detection. Frame rate and bandwidth affected.
- Heavy network utilization due to poor infrastructure. Bandwidth affected
- Viewing on poorly performing client PC's lowers perceived performance. Frame rate affected.

Optimizing your system

To see the bandwidth and frame rate currently required by the video stream, the AXIS 210/211 provides a tool that can be used to display these values directly in the video image.

To do this, special format strings are added as part of a text overlay. Simply add **#r** (average frame rate in fps) and/or **#b** (average bandwidth in kbps) to the overlay.



For detailed instructions, please see the online help for **Video & Image > Overlay Settings**, and the help for **File Naming & Date/Time Formats**.

Important!

- The figures displayed here are the values as delivered by the camera. If other restrictions are currently in force, (e.g. bandwidth limitation) these values might not correspond to those actually received by the client.
- For Motion JPEG, these values will be accurate as long as no frame rate limit has been specified.

Frame rates - Motion JPEG and MPEG-4

The following table show typical frame rates in frames/second (fps) for Motion JPEG and MPEG-4 video streams from the AXIS 210/211.

Note that these values are guidelines only - actual values may vary.

Motion JPEG settings:

- Viewing in AMC
- Compression level = 30%

MPEG-4 settings:

- Viewing in AMC
- Compression level = 30%
- Video Object Type = Advanced Simple
- GOV length = 8
- GOV structure = IP*

	Frame rates	
	Motion JPEG	MPEG-4
640x480	30	25
480x360	30	30
320x240	30	30
160x120	30	30

Notes: • Setting the GOV structure to use "I-frames only" will increase the frame rate at the expense of the bit rate.

Bandwidth

As there are many factors that affect bandwidth, it is very difficult to predict the required amounts. The settings that affect bandwidth are:

- the image resolution
- the image compression
- the frame rate
- the MPEG-4 object type
- the MPEG-4 GOV structure
- the maximum exposure time.

There are also factors in the monitored scene that will affect the bandwidth. These are:

- the amount of motion
- the image's complexity
- the lighting conditions.

For MPEG-4, if there is only limited bandwidth available, and if this is more important than the image quality, using a constant bit rate (CBR) is recommended. Use a variable bit rate (VBR) if the image quality needs to be maintained at a higher level. If supported on the network, consider also using MPEG-4 multicasting, as the bandwidth consumption will be much lower.

Troubleshooting

Checking the Firmware

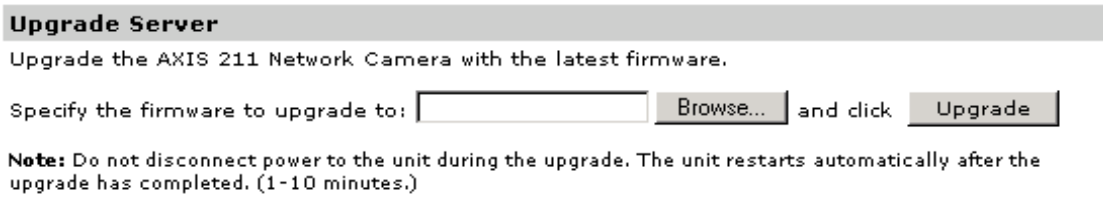
One of your first actions when troubleshooting a problem should be to check the currently installed firmware version. The latest version may contain a correction that fixes your particular problem. The current firmware version in your camera can be seen on the page **Setup > Basic Configuration.**

Upgrading the Firmware

Firmware is software that determines the functionality of the camera. When you upgrade the firmware with a file from the Axis Web site, your camera will receive the latest available functionality. Always read the upgrade instructions and release notes available with each new release, before updating the firmware.

Note: Preconfigured and customized settings will be saved when the firmware is upgraded (providing the features are available in the new firmware) although this is not guaranteed by Axis Communications. Always read the instructions and release notes available with each new release, before upgrading the firmware.

1. Save the firmware file to your computer. The latest version of the firmware is available free of charge from the Axis Web site at **www.axis.com/techsup**
2. Go to **Setup > System Options > Maintenance** in the camera's web pages.
3. In the **Upgrade Server** section, browse to the desired firmware file on your computer. Click **Upgrade**.


Upgrade Server
Upgrade the AXIS 211 Network Camera with the latest firmware.
Specify the firmware to upgrade to:
Browse...
and click
Upgrade
Note: Do not disconnect power to the unit during the upgrade. The unit restarts automatically after the upgrade has completed. (1-10 minutes.)

Notes:
- After starting the upgrade process, always wait at least 5-10 minutes before restarting the camera, even if you suspect the upgrade has failed.
- Your dealer reserves the right to charge for any repair attributable to faulty upgrading by the user.

Emergency Recovery Procedure

If power or the network connection to the camera is lost during the upgrade, the process will fail and the unit will become unresponsive. A flashing red Status LED indicates a failed upgrade. To recover the unit, follow the steps below. The serial number is found on the label attached to the bottom of the camera.

1. **Unix/Linux** - From the command line, type the following:
   arp -s <IP address of camera> <Serial number> temp
   ping -s 408 <IP address of camera>

   Windows - From a command/DOS prompt, type the following:
   arp -s <IP address of camera> <Serial number>
   ping -l 408 -t <IP address of camera>

2. If the unit does not reply within a few seconds, restart it and wait for a reply. Press CTRL+C to stop Ping.
3. Open a browser and type in the camera's IP address. In the page that appears, use the **Browse** button to select the upgrade file to use, e.g. axis210.bin or axis211.bin. Then click the Load button to restart the upgrade process.
4. After the upgrade has completed (1-10 minutes), the unit will automatically restart and show a steady green on the Power and Status LEDs and flashing green or amber on the Network LED.
5. Referring to the installation guide, reinstall the camera.

If the emergency recovery procedure does not get the camera up and running again, please contact Axis support at www.axis.com/techsup/

Axis Support

If you contact Axis support, please help us to help you solve your problems, by providing the server report, the log file and a brief description of the problem.

Server Report - go to **Setup > System Options > Support Overview**. The server report contains important information about the server and its software, as well as a list of the current parameters.

The **Log file** is available from **Setup > System Options > Logs & Reports**. The Log file records events in the unit since the last system restart and can be a useful diagnostic tool when troubleshooting.

Symptoms, Possible Causes and Remedial Actions

Problems setting the IP address

When using ARP/Ping.	Try the installation again. The IP address must be set within two minutes after power has been applied to the camera. Ensure the Ping length is set to 408. See the Installation Guide.
The camera is located on a different subnet.	If the IP address intended for the camera and the IP address of your computer are located on different subnets, you will not be able to set the IP address. Contact your network administrator to obtain an appropriate IP address.
The IP address is being used by another device	Disconnect the camera from the network. Run the Ping command. (In a Command/DOS window, type **ping** and the **IP address** of the unit). If you receive: **Reply from <IP address>: bytes = 32; time = 10 ms.....** - this means that the IP address may already be in use by another device on your network. You must obtain a new IP address and reinstall the unit. If you see: **Request timed out** - this means that the IP address is available for use with your camera. In this case, check all cabling and reinstall the unit.
Possible IP address conflict with another device on the same subnet.	The static IP address in the camera is used before the DHCP server sets a a dynamic address. This means that if the same default static IP address is also used by another device, there may be problems accessing the camera. To avoid this, set the static IP address to 0.0.0.0.

The camera cannot be accessed from a browser

The IP address has been changed by DHCP.	1) Move the camera to an isolated network or to one with no DHCP or BOOTP server. Set the IP address again, using the AXIS IP Utility (see the Installation Guide) or the ARP/Ping commands. 2) Access the unit and disable DHCP in the TCP/IP settings. Return the unit to the main network. The unit now has a fixed IP address that will not change. 3) As an alternative to 2), if dynamic IP address via DHCP or BOOTP is required, select the required service and then configure IP address change notification from the network settings. Return the unit to the main network. The unit will now have a dynamic IP address, but will notify you if the address changes.
Proxy server.	If using a proxy server, try disabling the proxy setting in your browser.
Other networking problems.	Test the network cable and connectors by connecting it to another network device, then Ping that device from your workstation. See the instructions above.
Incorrect host name.	Check that the host name and DNS server settings are correct. See the basic and advanced TCP/IP settings.

Cannot send notifications, uploads, alarms, etc, to a destination outside the local network

Firewall protection.	The camera can be configured to use a SOCKS server to reach networks on the other side of a firewall/proxy server.

Camera is accessible locally, but not externally

Firewall protection.	Check the Internet firewall with your system administrator.
Default routers required.	Check if you need to configure the default router settings.

Poor or intermittent network connection.

Network switch.	If using a network switch, check that the port on that device uses the same setting for the network connection type (speed/duplex) as set in the advanced TCP/IP settings. The Auto-Negotiate setting is recommended.

Video/Image problems – general

No images in browser (*Internet Explorer for Windows only*)	To enable the updating of video images in Microsoft Internet Explorer for Windows, set your browser to allow ActiveX controls. Also, make sure that AXIS Media Control (AMC) component is installed on your workstation.
Installation of additional ActiveX component restricted or prohibited.	Configure your camera to use a Java applet for updating the video images under Live View Config > Layout > Default Viewer for Internet Explorer. See the online help for more information.
Image too dark or too light.	Check the video image settings. See the online help on Video and Image Settings.
Missing images in uploads.	This can occur when trying to use a larger image buffer than is actually available. Try lowering the frame rate or the upload period.
Slow image update.	Configuring, e.g. pre-buffers, motion detection, high-resolution images, high frame rates, etc, will reduce the performance of the camera.
Poor performance.	Poor performance may be caused by e.g. heavy network traffic, multiple users accessing the unit, low performance clients, use of features such as Motion Detection, Event handling, Image rotation other than 180 degrees.
Image gradually gets darker or lighter.	When using the camera in locations lit by fluorescent lighting, check in the advanced image settings that the Exposure control is set to **Flicker-free**.
Image loses focus often.	Disable the DC-Iris lens (AXIS 211 only) in the settings for **Video & Image > Advanced**. Focus the camera following the instructions on page 11, and then enable the DC-Iris lens.
Images only shown in black & white.	Check the color level setting.
Blurred images.	Refocus the camera. Check in the Video & Image > Advanced - Camera Settings that DC-Iris (AXIS 211 only) is set to Enabled. If the images are still blurred adjust the metal ring until the image is sharp.
Rolling dark bands or flickering in image.	Try adjusting the Flicker-free exposure setting under advanced image settings. Note that the 'Hold Current'/Manual setting may cause unwanted effects.

Video/image problems – MPEG-4

Lower frame rate than expected.	Check with the administrator that there is enough bandwidth available. Check also the settings for bit rate control, in the **Video & Image > Advanced > MPEG-4** settings. Using an inappropriate video object type can also affect the frame rate. See the online help for more information. Check in the AMC control panel applet (MPEG-4 tab) that video processing is not set to **Decode only I frames**. Lower the image resolution. Reduce the number of applications running on the client computer.
No MPEG-4 displayed in the client.	Check that the correct network interface is selected in the AMC control panel applet (network tab). Check that the relevant MPEG-4 connection methods are enabled in the AMC control panel applet (network tab). In the AMC control applet, select the MPEG-4 tab and click the button Set to default MPEG-4 decoder.
No multicast MPEG-4 displayed in the client.	Check with your network administrator that the multicast addresses used by the AXIS 210/211 are valid for your network.
Multicast MPEG-4 only accessible by local clients.	Check if your router supports multicasting, or if the router settings between the client and the server need to be configured. The TTL (Time To Live) value may need to be increased.

Poor rendering of MPEG-4 images.	Color depth set incorrectly on clients. Set to 16-bit or 32-bit color. If text overlays are blurred, or if there are other rendering problems, you may need to enable Advanced Video Rendering. This is done on the MPEG-4 tab in the AMC control panel applet. Ensure that your graphics card is using the latest device driver. The latest drivers can usually be downloaded from the manufacturer's web site. If images are degrading, try decreasing the GOV length, see "*Advanced Settings*" on page 22.
Color saturation is different in MPEG-4 and Motion JPEG.	Modify the settings for your graphics adapter. Please see the adapter's documentation for more information.

The test image does not display as expected.

Image settings.	Not all settings have an effect on the test image. For more information, see the help on Image Settings.

The Power indicator is not constantly lit

Faulty power supply.	Check that you are using an AXIS PS-K power supply.

The Status and Network indicator LEDs are flashing red rapidly

Hardware failure.	Contact your Axis dealer.

The Status indicator LED is flashing red and the camera is inaccessible

A firmware upgrade has been interrupted or the firmware has otherwise been damaged.	See the *Emergency Recovery Procedure* above.

Poor quality snapshot images

Screen incorrectly configured on your workstation.	In Display Properties, configure your screen to show at least 65000 colors, i.e. at least 16-bit. Using only 16 or 256 colors will produce dithering artifacts in the image.

Browser freezes

Netscape 7.x or Mozilla 1.4 (or later) can sometimes freeze on a slow computer.	Lower the image resolution.

Problems uploading files

Limited space.	There is only limited space available for the upload of your own files. Try deleting one or more existing files, to free up space.
Missing images in uploads.	This can occur when trying to use a larger image buffer than is actually available. Try lowering the frame rate or the upload period.

Overlay is not displayed

Incorrect size or location of overlay.	The overlay may have been positioned incorrectly. Refer to the online help for information on the limitations when using image overlays and privacy masks.

Motion Detection triggers unexpectedly

Changes in luminance.	Motion detection is based upon changes in luminance in the image. This means that if there are sudden changes in the lighting, motion detection may be mistakenly triggered. Lower the sensitivity setting to avoid problems with luminance.

For additional assistance, please contact your reseller or see the support pages on the Axis Website at www.axis.com/techsup

Glossary of Terms

Active Speaker - a speaker with a built-in power amplifier.

ActiveX - A control (or set of rules) used by a browser. ActiveX controls are often downloaded and installed automatically as required.

ADPCM - Adaptive Differential Pulse Code Modulation. Predicts the analog signal digitally and the difference is coded.

AMC - AXIS Media Control. The control required for viewing video images in Internet Explorer for Windows. Installs automatically on first use.

API - Application Programming Interface. The Axis API can be used for integrating Axis products into other applications.

ARP - Address Resolution Protocol. A protocol for assigning an IP address to a physical device address that is recognized in the local network. The ARP command can be used to set the IP-address for your product.

ARTPEC - Axis Real Time Picture Encoder - used for video image compression.

CCD - Charge Coupled Device. CCD is one of the two main types of image sensors used in digital cameras. When a picture is taken, the CCD is struck by light coming through the camera's lens. Each of the thousands or millions of tiny pixels that make up the CCD convert this light into electrons.

CGI - Common Gateway Interface. A set of rules (or a program) that allows a Web Server to communicate with other programs.

Client/Server - Describes the network relationship between two computer programs in which one, the client, makes a service request from another - the server.

dB (Decibels) - A unit to measure sound level changes. A 3dB change is the smallest level change we can hear. A 3dB change is actually twice or half the audio power level. A gain of 0dB will leave the signal level unchanged.

DC-Iris - This special type of iris is electrically controlled by the Axis camera, to automatically regulate the amount of light allowed to enter.

DNS - The Domain Name System (DNS) locates and translates Internet domain names into IP (Internet Protocol) addresses.

Ethernet - A widely used networking standard.

ETRAX - Axis' own microprocessor.

Firewall - A virtual barrier between a LAN (Local Area Network) and other networks, e.g. the Internet.

FTP - File Transfer Protocol. Used for the simple transfer of files to and from an FTP-server.

Full duplex - Transmission of data, e.g. audio, in two directions simultaneously.

G.711 - G.711 is the international standard for encoding telephone audio on 64 kBit/s channel. It is a pulse code modulation (PCM) scheme operating at 8 kHz sample rate.

G.726 - Frequently used speech-compression algorithm in telecommunications due to its high perceived speech quality and low resource requirements.

Half duplex- A half duplex link can communicate in only one direction, at a time. Two way communication is possible, but not simultaneously. Walkie-talkies and CB radios mimic this behavior in that you cannot hear the other person if you are talking.

HTML - Hypertext Mark-up Language. Used widely for authoring documents viewed in web browsers.

HTTP - Hypertext Transfer Protocol. The set of rules for exchanging files (text, images, sound, video, and other files) on the World Wide Web.

HTTPS - Hypertext Transfer Protocol over Secure Socket Layer. A web protocol that provides encryption for page requests from users and for the pages returned by the web server.

Intranet - A private network limited to an organization or corporation. Usually closed to external traffic.

IP - Internet-Protocol. See TCP/IP.

IP address - A unique number used by a network device, to allow it to be identified and found on the network. The 32-bit IP address is made up of four groups (or quads) of decimal digits separated by periods. An example of an IP address is: 192.168.0.1

ISMA - Internet Streaming Media Alliance

JPEG - A standard image format, used widely for photographs. Also known as JPG.

LAN - A local area network (LAN) is a group of computers and associated devices that typically share common resources within a limited geographical area.

Linux - A popular operating system, which is "open source" and practically free of charge.

Lux - A standard unit for the measurement of light, where 1 Lux equals the light emitted from a single candle at a distance of one meter.

Mbit/s - Megabits per second. A unit for measuring speeds in networks. A LAN might run at 10 or 100 Mbit/s.

MPEG-4 - A standard video format, used for low bandwidth video streams.

Multicast - The same information is sent only once and only to the intended recipients.

NTSC - National Television Standards Committee. NTSC is the standard format used for televisions in most of North and Central America, and Japan.

NWAY - A network protocol that automatically negotiates the highest possible common transmission speed between two devices.

PAL - Phase Altering Line. PAL is the standard format used for televisions in most of the world (other than the US, Canada, and Japan).

PCM - Pulse Code Modulation. Analog signal converted directly to a digital.

Ping - A small utility used for sending data packets to network resources to check that they are working and that the network is intact.

Pre/post alarm image - The images from immediately before and after an alarm.

Protocol - A special set of rules governing how two entities will communicate. Protocols are found at many levels of communication, and there are hardware protocols and software protocols.

Router – A device that determines the next network point to which a packet should be forwarded on its way to its final destination. A router is often included as part of a network switch (see below).

RTP– Real-Time Transfer Protocol. A transfer protocol designed for delivery of live contents, e.g. MPEG-4.

Simplex - In simplex operation, a network cable or communications channel can only send information in one direction.

SMTP - A common e-mail protocol.

SNMP - Simple Network Management Protocol. An application layer protocol that facilitates the exchange of management information between network devices. It is part of the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

Subnet Mask - An IP address consists of two components: the network address and the host address. “Subnetting’ enables a network administrator to further divide the host part of the address into two or more subnets. The subnet mask identifies the subnet to which an IP address belongs.

Switch – Whilst a simple hub transmits all data to all devices connected to it, a switch only transmits the data to the device it is specifically intended for.

TCP/IP - Transmission Control Protocol/Internet Protocol. A suite of network protocols that determine how data is transmitted. TCP/IP is used on many networks, including the Internet. TCP keeps track of the individual packets of information and IP contains the rules for how the packets are actually sent and received.

URL - Uniform Resource Locator. An “address” on the network.

Varifocal – A varifocal lens provides a wide range of focal lengths, as opposed to a lens with a fixed focal length, which only provides one.

WAN - Wide-Area-Network. Similar to a LAN, but on a larger geographical scale.

Web server - A program on a computer (server) providing the resources (e.g. web pages) requested by the user (client).

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